JVC

# SERVICE MANUAL

MODEL
## DD-99 A/B/C/E/J/U
STEREO CASSETTE DECK

No. 4207
March 1982

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# Specification

Type : Stereo cassette deck
Track system : 4-track, 2-channel
Tape speed : 1-7/8 inch/sec (4.8 cm/sec)
Frequency response : (−20 dB recording)
Metal tape: *1
15−20,000 Hz
25−18,000 Hz (±3 dB)
SA/Chrome tape: *2
15−20,000 Hz
25−18,000 Hz (±3 dB)
SF/Normal tape: *3
15−19,000 Hz
25−17,000 Hz (±3 dB)
(0 dB recording)
Metal tape:
25−12,500 Hz (±3 dB)
SA/Chrome tape:
25−8,000 Hz (±3 dB)
SF/Normal tape:
25−8,000 Hz (±3 dB)

Frequency response when using the computer B.E.S.T. tuning system
(−20 dB recording)
Metal tape:
40−12,500 Hz (±1 dB)
SA/Chrome tape:
40−12,500 Hz (±1 dB)
SF/Normal tape:
40−12,500 Hz (±1 dB)
Those values are almost the same for all types of tapes when the computer B.E.S.T. turning system is used.

Note: *1........JVC ME or Equivalent
*2........TDK SA or Equivalent
*3........MAXELL UD or Equivalent

S/N ratio : 60 dB (S=1 kHz, K3=3% N=A-weighted, Metal tape)
The S/N is improved by about 15 dB at 500 Hz and by max. 20 dB at above 1 kHz ~ 10 kHz with DOLBY C NR on and improved by 5 dB at 1 kHz and by 10 dB at above 5 kHz with ANRS/DOLBY B NR on.
Remote control socket : 8-pin DIN type
Power requirement : AC 240 V, 50 Hz (DD-99A)
AC 120 V, 60 Hz (DD-99C/J)
AC 240/220/120 V 50/60 Hz (DD-99B/E)
AC 240/220/120/100 V 50/60 Hz (DD-99U)
Power consumption : 37 W
Dimensions : 17-1/8″ (435 mm) W
4-3/8″ (110 mm) H
12-3/4″ (323 mm) D
(with feet, buttons, switches)
Weight : 17.0 LBS (7.7 kg)
Accessories : Pin cords .......... 2

Design and specifications subject to change without notice.

# Features

1. Two-motor full-logic mechanism with quartzlocked pulse-servo DD (direct drive) motor.
    - A quartz-locked pulse-servo DD motor newly developed for the capstan drive and a DC motor for the reel drive
    - Low wow/flutter
    - Remote control terminal provided
    - Real-time pause mechanism
2. New computer B.E.S.T. (Bias, Equalization, Sensitivity of Tape) Tuning System used to ensure optimum performance whatever tape you use. Bias, medium frequency equalization, tape sensitivity and high frequency equalization can be set to match the tape being used. Even when recordings are made when you are absent, the B.E.S.T. Tuning System will operate autgomatically at the start of the recording.
3. Three-head system permitting monitoring while recording is being made.
    - X-cut SA (Sen-Alloy) record/playback combination heads
    - 2-gap SA erase head
4. Metal tape compatibility
5. 2-color FL digital meter with peak-hold function.
6. All-stage DC direct-coupled recording/playback amplifier.
7. DOLBY* C NR (Noise Reduction) system
    - Switchable between Dolby C NR and ANRS/Dolby B NR
8. 4-digit FL electronic counter
    - Stopwatch function selectable
    - Dual memory/auto rewind mechanism
9. Music Scan mechanism
    "Under license of Staar S.A., Brussels, Belgium".
10. Headphones in connection with slide system output level control.
11. Record muting (REC MUTE) mechanism with operation indicator LED.
12. TIMER STANDBY mechanism with safety lock.
13. Automatic input select system.

*Dolby C type noise reduction system is manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

# Controls and Connections

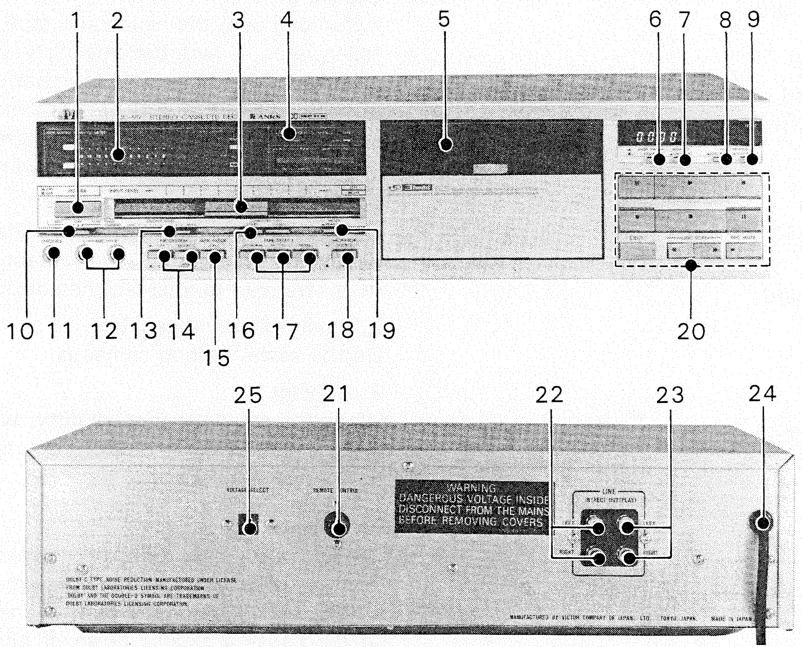


Fig. 1

1. POWER switch
2. DOT MATRIX PEAK/VU METER indicator
3. INPUT LEVEL controls
4. Indicators [ $\frac{\text{ANRS}}{\text{DOLBY B}}$ — DOLBY C, SOURCE-TAPE, COMPUTER B.E.S. Tuning SYSTEM ]
5. Cassette Holder
6. STOP WATCH/COUNTER select switch
7. MEMORY switch
8. AUTO REWIND (ON-OFF, PLAY-STOP) switch
9. Counter reset button
10. TIMER STANDBY switch
11. PHONES jack
12. Microphone jacks [MIC, L-left, R-right]
13. OUTPUT LEVEL control
14. NR system switch
    [OFF—ANRS/DOLBY B—DOLBY C]
15. MPX FILTER switch
16. Computer switch [START, PRESET]
17. Tape select switch [SF/NORM—SA/$CrO_2$—METAL]
18. MONITOR switch [SOURCE—TAPE]
19. METER switch [PEAK/VU]
20. Cassette operation buttons
    ◀◀ REW (Rewind) button
    ▶ PLAY button
    ▶▶ FF (fast-forward) button
    ○ REC (Recording) button
    ■ STOP button
    EJECT button
    MUSIC SCAN button [◁◁ ▷▷]
    — REC Muting button
21. REMOTE CONTROL socket
22. LINE IN (REC) terminals
23. LINE OUT (PLAY) terminals
24. Power cord
25. Voltage select switch (DD-99B/E/U)

# Main Parts Location

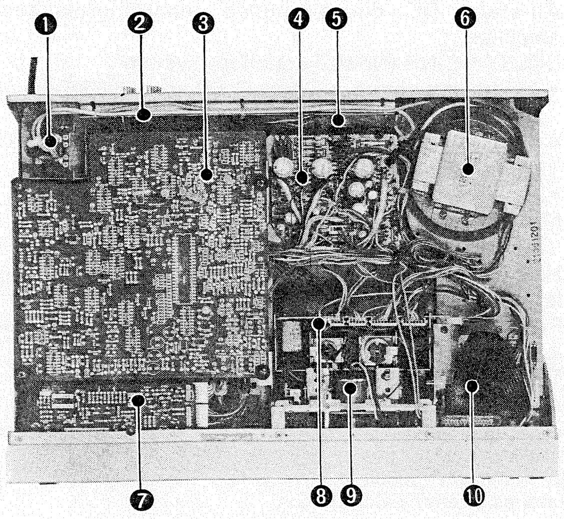
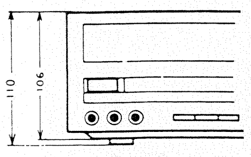


Fig. 2

❶ Power switch P.W. Board
❷ Pin jack ass'y
❸ Computer P.W. Board
(Main amp. P.W. Board is inside)
❹ Power supply P.W. Board
❺ Remote control socket
❻ Power transformer
❼ Display P.W. Board
❽ Mecha. control P.W. Board
❾ Mechanical assembly
❿ Tape counter P.W. Board

# Dimensions



Unit: mm

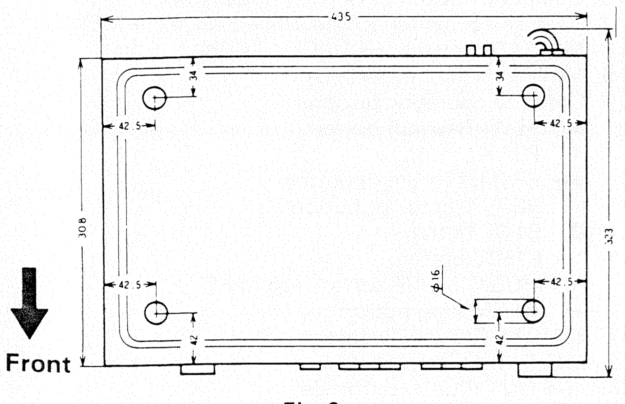
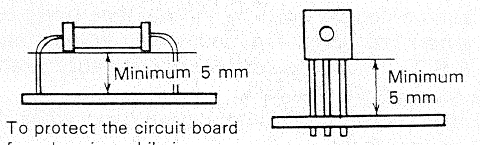


Fig. 3

# Safety Precautions

## ⚠Safety mark

Safety is very important with this unit. When replacing the parts marked ⚠, be sure to use only those designated parts. The designated resistors, diodes, transistors become hot in use. When replacing, be sure to secure them with a distance of more than 5 mm from the circuit board. In addition, they are banded together to avoid touching other wiring, recheck this point as well after repair.
The wiring of the primary side should be wound more than one and half times, then soldered.



To protect the circuit board from burning while in use.

Fig. 4

# Maintenance

To get long, trouble-free service, maintenance is important. Do not forget cleaning and demagnetizing.

**Cleaning**

After long use, the heads and tape part — capstan, pinch roller, etc. — will become dirty with dust or magnetic particles. Dirty heads cause imperfect erasing or high frequency drop-off. A dirty capstan and pinch roller will cause unstable tape speed, leading to increased wow and flutter. Always keep them clean by following the procedure below.

**1. Heads**

Use the head cleaning stick provided to wipe the surface where the tape comes into contact with the head.
(It is effective to moisten the cotton with alcohol.)

**2. Pinch roller and capstan**

Do the same method as heads.

**3. Cabinet**

When the cabinet becomes dirty, wipe it with a soft cloth soaked with a neutral cleaning solution of a polishing cloth.
* Do not use thinner or benzine.

**Demagnetizing**

The heads are made from a material resistant to magnetization, but after long use they become magnetized.
A magnet brought into their vicinity can magnetize the heads, causing excess noise. If noise seems to have increased, demagnetize the heads with a head demagnetizer through the following procedure.

1. Turn the POWER switch OFF.
2. Wrap the tip of the demagnetizer with vinyl tape or soft cloth so as not to damage the head surface. Switch on the demagnetizer and bring it close to the head.
3. Move the tip of the demagnetizer slowly first to the left and right, then up and down in front of the head.
Gradually move it away from the head and switch it off at a distance of more than 30 cm. (12″)
4. The erase head need not be demagnetized. The capstan shaft and tape guide should be demagnetized in the same way as the record/playback head.

* Do not bring a magnetized metallic object (a screwdriver, for example) near the head as this will increase noise.

# Removal of the Main Parts

Observe care in handling the parts are since the parts are small in size and the distance between them are short due to a deck design aimed mainly at compactness and high performance.

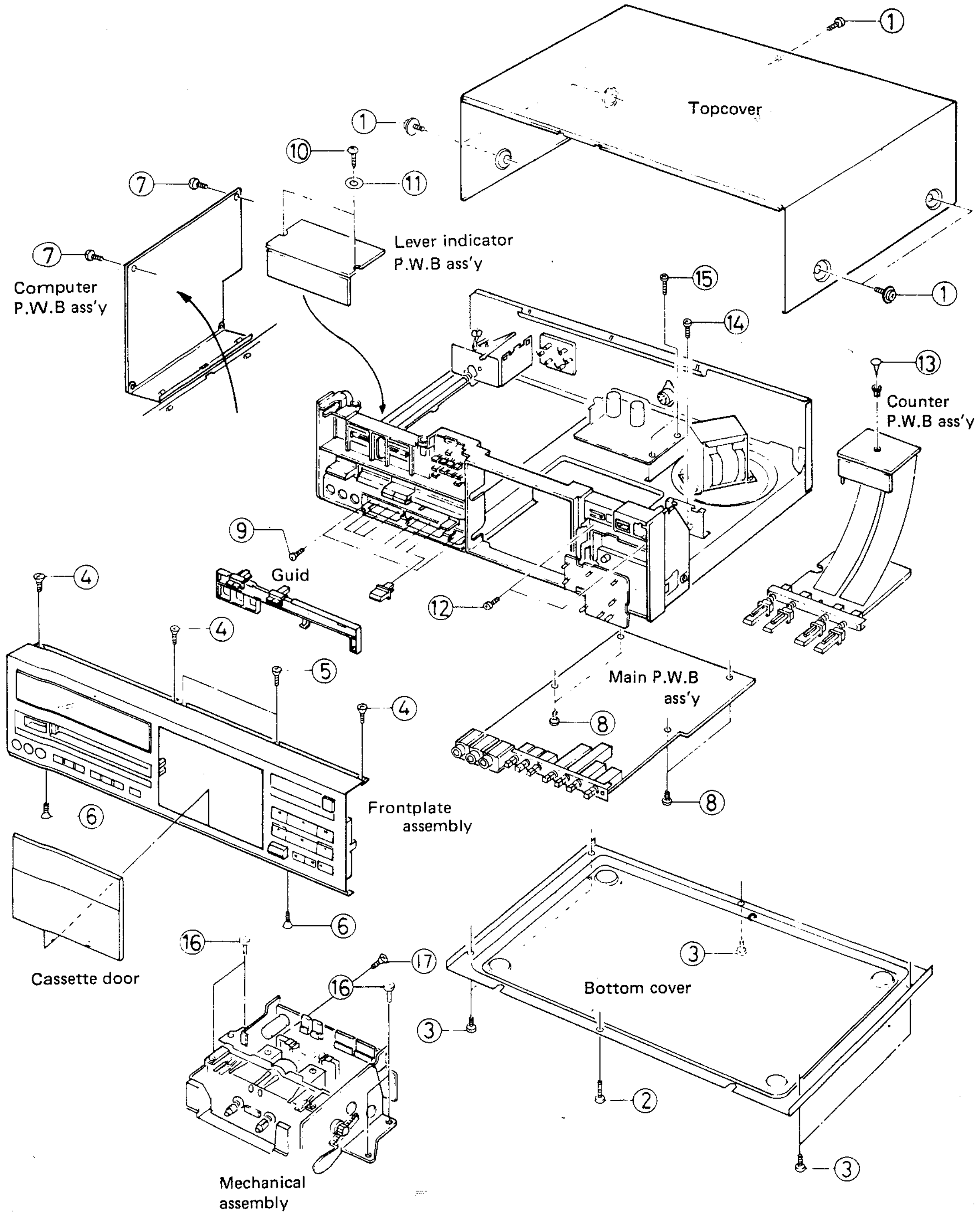


Fig. 5

## Enclosure assembly parts

1. Cassette door
   Push the EJECT button to open the cassette door. Slide off the cassette door upwards to unlock its pawls of both sides.
2. Top cover
   Remove 5 screws ① fastening the top cover.
   (4 screws – VKZ3001-002 on both side and a screw – SDST3006R – on rear side.)
3. Bottom cover
   1) Remove a screw ② – SSSF3010Z – fastening the bottom cover with the front plate.
   (2) Remove 5 screws ③ – SDST3006Z fastening the bottom cover.
4. Front plate assembly
   (1) Remove 5 screws (3 screws ④ = SSSF3008Z and 2 screws ⑤ = SSST3006C fastening the mechanical assembly.) on upper side.
   (2) Remove 2 screws ⑥ on bottom side.

## Electrical parts

When removing wire clamp (QHX2075-001), cut off it, and when clamping wires, use a new parts.

1. Computer P.W. Board ass'y
   Remove 2 screws ⑦ – SDST3006V fastening the computer P.W. board, and open its board to left side.
2. Main P.W. Board ass'y
   1) Remove 4 screws ⑧ fastening the main P.W. board (on bottom side.)
   2) Remove the guide with knobs (Timer standby, output level.).
   (3) Remove 2 screws ⑨ – SSSP3006VS fastening the switches on the front side.
   4 Pull off the main P.W. board ass'y to rear under side.
3. Level indicator P.W. Board ass'y
   Remove 2 screws ⑩ and 2 washers ⑪
4. Electronic counter P.W. Board ass'y
   (1) Remove 2 screws ⑫ fastening the switches (Stop watch, Memory, Auto rewind)
   (2) Remove a screw ⑭ fastening the bracket to the P.W. board rear side.
5. Counter FL P.W. Board ass'y
   (1) Remove a plastic rivet ⑬ fastening the P.W. board.
   (2) Pull off the P.W. board to upper side.
6. Power supply P.W. Board ass'y
   Remove 2 screws ⑮ – SDST3006V fastening the power supply P.W. board ass'y.
7. Mecha. control P.W. Board ass'y
   Remove a screw ⑰ fastening the mecha. control P.W. board ass'y.

## Mechanical assembly

(When removing the front plate, remove 2 screws fastening the mechanical assembly on upper side.)

(1) Remove 4 screws ⑯ = SDST3006C fastening the mecha. bracket to the chassis. (L and R side, 2 p.c.s.)
(2) Pull off the mechanical assembly to back side.

## Mechanical parts

Mechanical parts are the same as those parts of model DD-66.
Please refer to the service manual of DD-66A/B/C/E/J/U. (No. 4204)

# Main Adjustments

## [I] Equipment and measuring instruments used for adjustment

1. **Electrical adjustment**
   1) Electronic voltmeter
   2) Audio frequency oscillator
      (range: 50–20 kHz and output 0 dB with impedance 600 Ω)
   3) Attenuator
   4) Standard tapes for REC/PB
      Maxell UD – SF tape
      TDK SA – SA tape } or equivalent
      JVC ME – Metal tape
   5) Reference tapes for playback (JVC Test Tape)
      VTT-658 (for head azimuth adj.)
      VTT-656A-A (for motor speed, wow flutter adj.)
      VTT-664 (for Reference Level 1 kHz)
      TTT-675N (for playback frequency response)
      TMT-6247 (for music scanning)
      TMT-6237 (for music scanning)
   6) Resistors
      600 Ω (for attenuator matching)
2. **Mechanical adjustment**
   1) Torque testing cassette gauge
   2) Blank tape (C-120) for tape running checker.

## [II] Adjustment and repair of the mechanism

(Adjust the mechanism or confirm that it is in normal operating condition prior to the adjustment of the electrical circuit.)

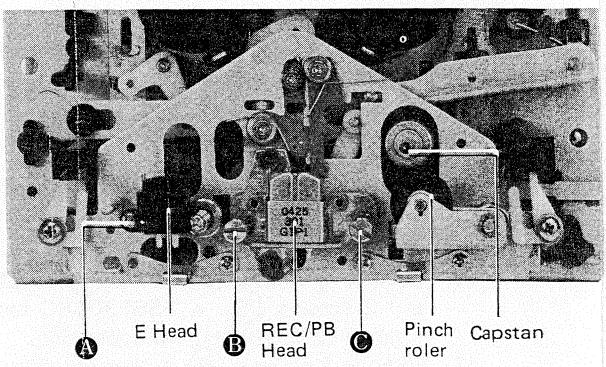
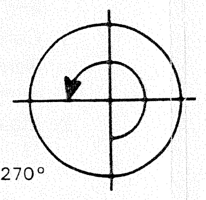


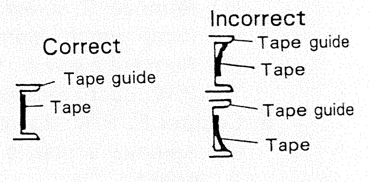
Fig. 6

**Tape-to-head contact adjustment**

1) Turn the adjusting screw Ⓐ for aligning the erase head until it stops. Then, turn the screw in the reverse direction by 270° (a $^3/_4$ revolution).



2) Check the tape-to-head contact using a C-120 tape having pads.
3) Check it again with a Metal tape.
   Checking method:
   Record a 400 Hz or 1 kHz signal with 0 VU +20 dB. Erase the recording. Checking if the erasing is satisfactorily performed.
4) After adjustment, apply screw bond on the adjusting screw to prevent its loosening.

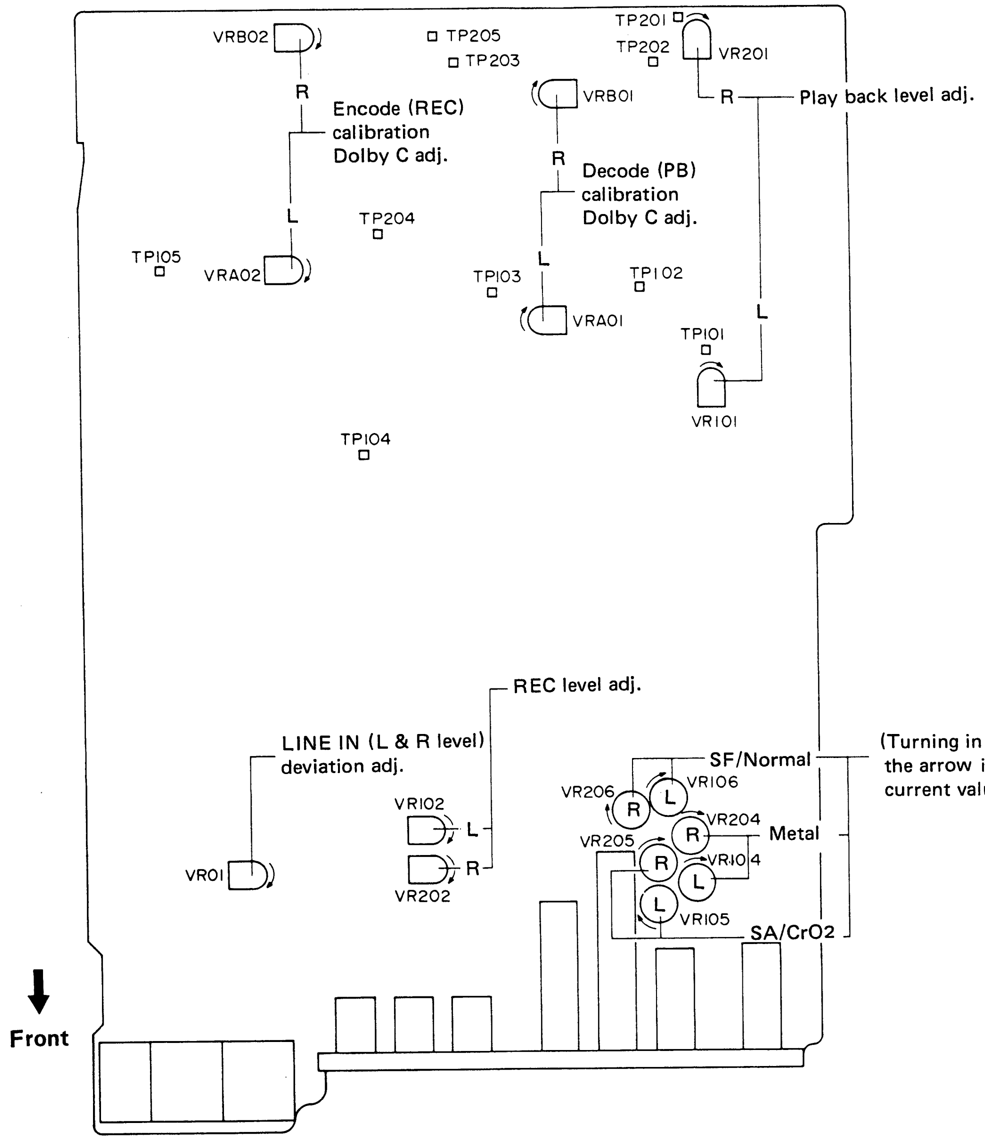


| Item | Adjustment | Adjusting point | Standard value | Remarks |
|---|---|---|---|---|
| Adjusting record/playback head position | 1. Connect an electronic voltmeter to the LINE OUT terminals.<br>2. Playback the VTT-658 test tape.<br>3. Adjust the head angle with the screw Ⓒ until the reading of the electronic voltmeter becomes maximum for both channels.<br>4. After adjusting, set the screw with screw bond. | Screw Ⓒ | Maximum | If the head is worn, disconnected or exceedingly magnetized so as not to provide the necessary characteristics, replace it with a new one. After replacement, the head position adjustment as well as the playback level adjustment, the bias current adjustment and the recording level adjustment are all necessary. If the output difference between the left and right channels exceeds 3–4 dB, the head is defective. Replace it with a new one. |
| Checking playback torque | Employ a torque testing cassette tape for the checking. | | 40–70 gr-cm | If the standard torque is not obtained, replace the take-up disc assembly. |
| Checking fast forward torque | Measure the torque in the fast forward mode in the same manner as in the above. | | More than 80 gr-cm | If the standard torque is not obtained, perform the following.<br>1. Clean the idler, the motor pulley, the take-up reel disc circumference, the flywheel circumference, etc.<br>2. Replace the idler. |
| Checking rewind torque | Measure the torque in the rewind mode in the same manner as in the above. | | More than 80 gr-cm | If the standard torque is not obtained, clean the idler, motor pulley, flywheel circumference, supply reel disc circumference, etc. |
| Checking wow and flutter | Connect a wow and flutter meter to LINE OUT terminals.<br>Playback the VTT-656-A test tape.<br>Check to see if the reading of the meter is within 0.03% (WRMS). | | | If the reading becomes moving value even if conforming to the standard, a re-claim may be raised. Repairs are necessary. |
| Music scanning | 1. Using a TMT-6247, the music scan mechanism does function.<br>2. Using a TMT-6237, the music scan mechanism does not function. | | | |

## [III] Electrical adjustment location

### ■ Main Amp. P.W. Board (parts ass'y side view)

**Turning in the direction of the arrow increases the levels.**


VRB02
TP205
TP203
TP201
TP202
VR201
R
Encode (REC) calibration Dolby C adj.
VRB01
R
Play back level adj.
R
Decode (PB) calibration Dolby C adj.
L
TP204
TP105
VRA02
TP103
L
TP102
VRA01
TP101
L
VR101
TP104
REC level adj.
LINE IN (L & R level) deviation adj.
VR102
L
R
VR202
VR01
SF/Normal
VR206
R
L
VR106
VR204
R
Metal
VR205
R
VR104
L
L
VR105
SA/CrO2
Front

(Turning in the direction of the arrow increases the bias current value.)

### ■ FL P.W. Board (Parts Ass'y Side View)

**Turning in the direction of the arrow increases the levels.**

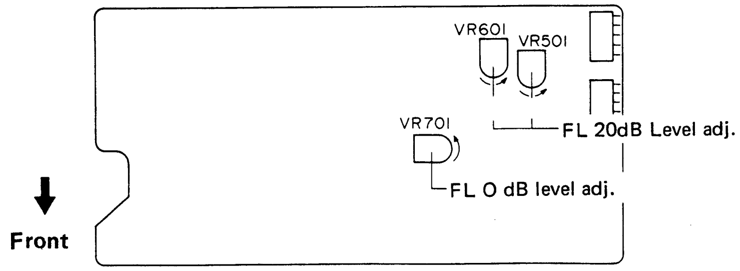

VR601
VR501
VR701
FL 20dB Level adj.
FL 0 dB level adj.
Front

**Fig. 7**

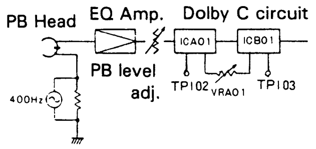
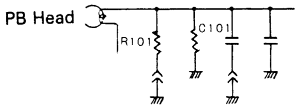
## [IV] Electrical circuit adjustment procedure

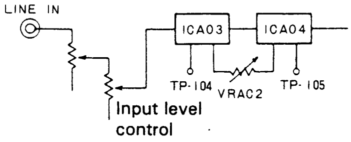
In the steps marked by an asterisk (*), adjustment should be performed, however, only checking is sufficient with steps other than those.

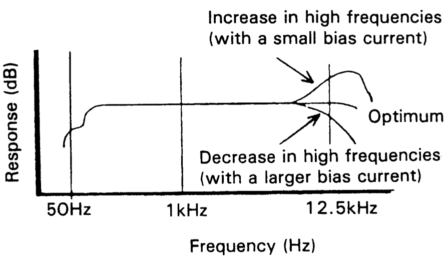
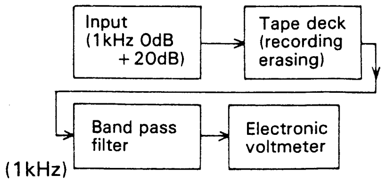
Adjustment should be performed in the order of steps 1,2,3 ......

Perform these adjustments with the ANRS switch set to OFF and with the OUTPUT level control set max.

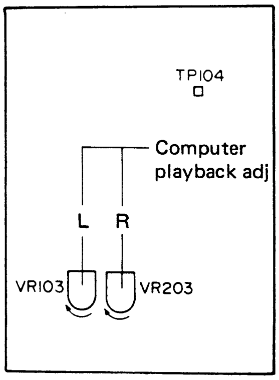
The DD-99 employs a combination record/playback head, thus permitting monitoring the sound being recorded. For adjustment, playback of the recorded sounds is therefore possible simply by switching the MONITOR switch from SOURCE to TAPE. (It is unnecessary to rewind the tape.)

<table>
<tr><th>Step</th><th>Item</th><th>Adjustment</th><th>Adjusting point</th><th>Standard value</th><th>Remarks</th></tr>
<tr><td>1</td><td>Decode (P.B.) calibration Dolby C</td><td>1. Dolby C NR switch set to OFF.<br>2. Apply 400 Hz signal to TP101. (PB level control is free position) Adjust the input level control until the signal is available −2.5 dBs at the TP102.<br>3. Next, adjust VRA01, VRB02 so that TP103, 203 signal become −2.5 dBs.</td><td>VRA01<br>VRB02</td><td>−2.5 dBs</td><td>
</td></tr>
<tr><td>2</td><td>Play back level</td><td>1. Play back the VTT-664 reference tape (1 kHz) with the tape select switch set to the SF/NORM position.<br>2. Adjust VR101 and VR201 until the LINE OUT becomes about −4 dBs.</td><td>VR101<br>VR201</td><td>−4 dBs<br>(0.5 V)</td><td>This adjustment becomes necessary when a change is playback level results (for example, due to head replacement)</td></tr>
<tr><td>3</td><td>PB EQ (PB frequency responce)</td><td>

Unsolder the pattern slit as step 1, 2 and 3 for to see that the 1 kHz and 10 kHz signal output deviations fall within the flat levels. (1, 2 and 3 steps increases each 0.5 dBs.)</td><td colspan="3"><table><tr><th></th><th>R101</th><th>C101</th></tr><tr><td>1</td><td>○</td><td>×</td></tr><tr><td>2</td><td>○</td><td>○</td></tr><tr><td>3</td><td>×</td><td>○</td></tr></table>
○ = connection<br>× = Unconnection</td></tr>
<tr><td>4</td><td>Encode (REC) calibration Dolby C</td><td>1. Dolby C NR switch set to OFF.<br>2. Apply 400 Hz signal to the LINE IN terminals.<br>3. Adjust the input level control until the signal is available −2.5 dBs at the TP-104.<br>4. Adjust the VRA02 so that TP105 signal become −2.5 dBs.</td><td>VRA02<br>VRB02</td><td>−2.5 dBs</td><td>
</td></tr>
<tr><td>5</td><td>LINE IN L&R level deviation</td><td>1. Set the input level control to MAX.<br>2. Adjust the input level so that the monitor out of L channel become −4 dBs, and adjust VR01 so that the monitor out of R channel become −4 dBs.</td><td>VR01</td><td>−4 dBs</td><td></td></tr>
<tr><td>6</td><td>Adjusting Fluorescent tube indicator sensitivity</td><td>1) Set the METER switch to VU.<br>2) Set the MONITOR switch to SOURCE, then apply a 1 kHz signal of around −20 dB to the Rch and Lch of the LINE IN terminals.<br>3) Adjust the INPUT LEVEL control so that the output level at the LINE OUT terminals is −4 dB.<br>4) Adjust VR701 ("0" dB level adjustment) so that "0" dB lights at both R and L. At this time, "0" dB must go out at both R and L with the input ATT (attenuation) level lowered by 0.5 dB.<br>5) Lower the input ATT level by 20 dB.<br>6) Adjust VR501 (Lch) and VR601 (Rch) so that "−20" dB lights at both R and L. At this time, "−20" dB must go out at both R and L with the input ATT level lowered by 1 dB.<br>7) Repeat steps 4) — 6).</td><td>VR701<br>VR501<br>601</td><td>0 VU<br>−20 VU</td><td>Perform the adjustment when the parts are replaced.</td></tr>
</table>

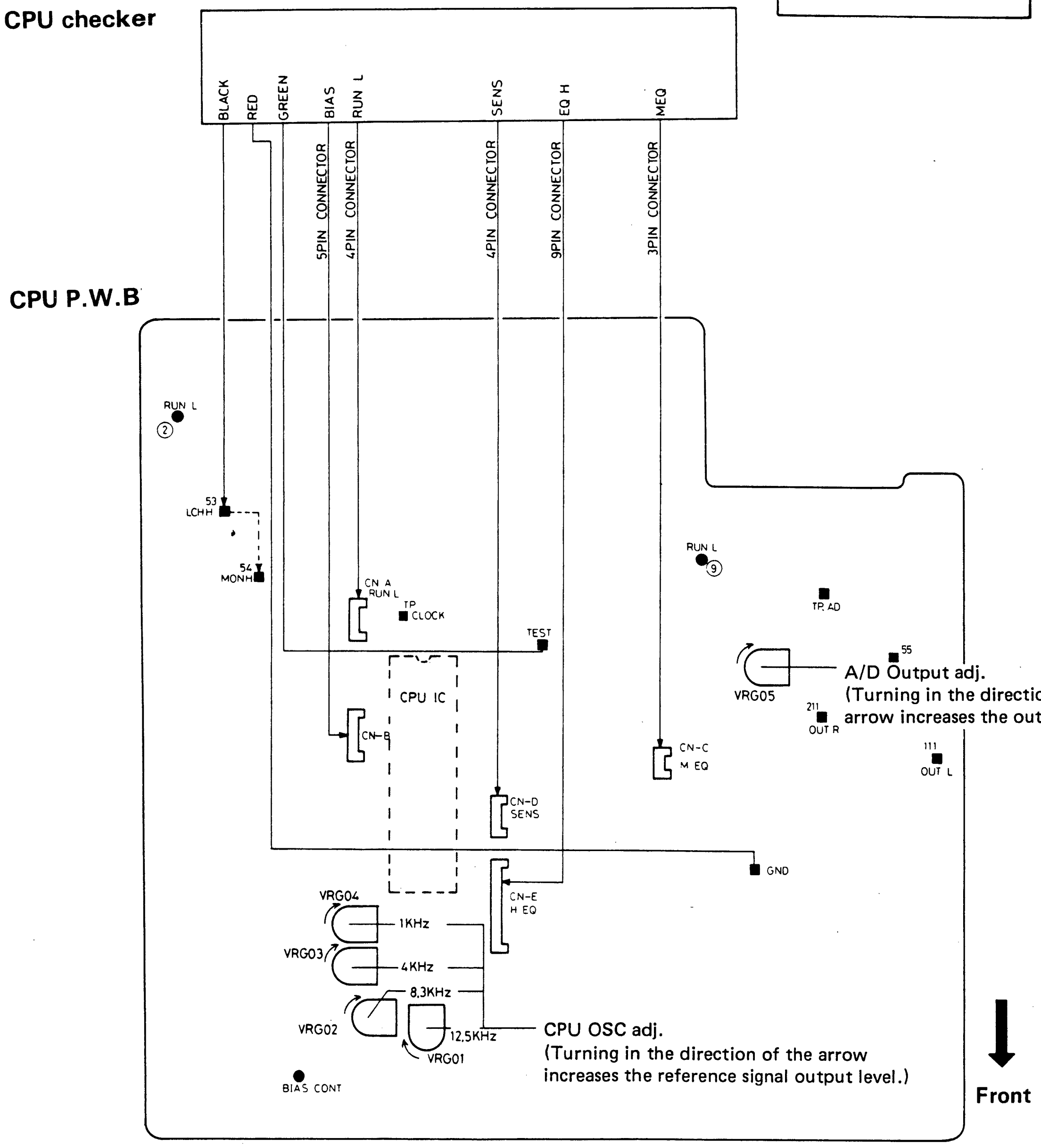
| Step | Item | Adjustment | Adjusting point | Standard value | Remarks |
|---|---|---|---|---|---|
| 7. | Checking record/ playback frequency response | (Dolby C NR: OFF<br>OUTPUT level control: MAX)<br>Record 1 kHz, 50 Hz and 12.5 kHz signals at an input level of 0 VU to −20 dB.<br>Play back the tape.<br>Check to see that the 50 Hz and 12.5 kHz signal output deviations fall within the standard range, using the 1 kHz signal output as a reference.<br> | For SF/ NORM tape;<br>VR106<br>206<br>For SA/ $CrO_2$ tape;<br>VR105<br>205<br>For Metal tape;<br>VR104<br>204 | Reference frequency; 1 kHz<br>0±3 dB at 50 Hz<br>0±4 dB at 12.5 kHz | This checking should be performed for normal, chrome and metal tapes and for both right and left channels.<br>1. Bias current adjustment for a cassette deck should generally be performed referring to the record/ playback frequency response. This is because the frequency response of a cassette deck depends more greatly upon the bias current than does that of an open reel deck. The current measuring method described below is an alternative one.<br>2. If the bias current is not properly adjusted, the record and playback characteristics become as shown left. |
| 8 | Adjusting recording level | 1. Apply a 1 kHz, approx. −10 dB signal to the LINE IN terminals. Adjust the recording level controls until the signal is available at −4 dBs at the LINE OUT terminals.<br>2. After checking to see if the FL indicator become 0, record the signal applied to both left and right channels using normal tape.<br>3. Play back the recording part. Perform the recording signal adjustment with VR102 and VR202 so that the FL level indicator become 0. | VR102<br>202 | 0 VU | The level difference between left and right channels for SF/NORMAL tape, chrome tape and metal tape should be less than 1 dB (1 VU). Perform the adjustment using a normal tape, level difference between recording and playback for SA/$CrO_2$ and metal tapes, should be less than 1.5 dB, and right channels should also be less than 1 dB. |
| 9 | Checking record/ playback signal distortion | 1. Record a 1 kHz, −4 dBs signal to LINE IN terminals and perform recording with the FL indicator become 0.<br>2. Play back the recorded part. Check the output with a distortion meter to see if the value conforms to the standard value. |  | SF/NORM tape;<br>Less than 2.5%<br>SA/CrO2 tape;<br>Less than 3%<br>METAL tape;<br>Less than 2% | Be sure to perform this adjustment following bias current and recording level adjustments. |
| 10 | Checking signal to noise ratio in recording/playback | 1. Record a 1 kHz, 0 VU signal. Stop the input by disconnecting from the terminal to perform nonsignal recording.<br>2. Play back the recorded part. Measure the 0 VU recording output and the nonsignal recording output for comparison using an electronic voltmeter. Check to see if the value conforms to the standard value. |  | SF/NORM, SA/$CrO_2$ and Metal tapes;<br>More than 42 dB | Apply an output (−72 dBs) to the MIC terminals with the recording level controls set to maximum so that the FL indicator becomes to 0. |
| 11 | Checking erasing coefficient | 1. Apply a 1 kHz signal to the LINE IN terminals. Adjust the recording level controls until the FL indicator become 0.<br>2. Perform recording with the signal enhanced by 20 dB.<br>3. Erase a part of the recording.<br>4. Measure the output difference between the erased part and nonerased part to compare with an electronic voltmeter. |  | More than 65 dB | For the measuring, connect a band pass filter between the deck and the electronic voltmeter.<br> Input (1kHz 0dB +20dB)<br>Tape deck (recording erasing)<br>Band pass filter<br>Electronic voltmeter<br>(1kHz) |

## [V] Adjustment of CPU P.W. Board ass'y


TP104
L
R
VR103
VR203

Computer playback adj

Connection between CPU P.W.B. of DD-99 and CPU checker.

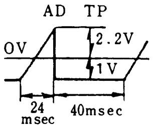
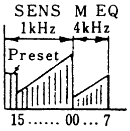
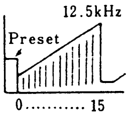

CPU checker
BLACK
RED
GREEN
BIAS
RUN L
SENS
EQ H
MEQ
5PIN CONNECTOR
4PIN CONNECTOR
4PIN CONNECTOR
9PIN CONNECTOR
3PIN CONNECTOR
CPU P.W.B
RUN L
②
53
LCHH
54
MONH
CN A
RUN L
TP
CLOCK
TEST
CPU IC
CN-B
CN-D
SENS
CN-C
M EQ
RUN L
⑨
TP. AD
55
VRG05
211
OUT R
111
OUT L
GND
CN-E
H EQ
VRG04
1KHz
VRG03
4KHz
8.3KHz
VRG02
12.5KHz
VRG01
BIAS CONT
Front

A/D Output adj.
(Turning in the direction of the arrow increases the output voltage.)

CPU OSC adj.
(Turning in the direction of the arrow increases the reference signal output level.)

Fig.8

## ■ Requirement for adjustment (switch positions of CPU checker)

| | Item | CPU checker | | | | | DD-99 | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | MONITOR SW | TEST SW | TEST PRO SW2 | TEST PRO SW1 | Connection point of alligator clip (Red) | Operation buttons | CPU P.W. Board | | |
| | | | | | | | | Post pin for removal | Check point | Adjustment |
| 1 | Check of computer preset | OFF | OFF | OFF | OFF | 54 | STOP | | Check by CPU checker's LED | |
| 2 | CPU OSC adjustment | ON | ON | OFF | OFF | 54 | STOP<br>↓<br>PRESET<br>↓<br>START | ②<br>RUNL | $\boxed{55}$<br>1kHz→4kHz→8.3kHz→12.5kHz→1kHz repeat | 1kHz→VRG04<br>→−27dBs<br>4kHz→VRG03<br>→−28dBs<br>8.3kHz→VRG02<br>→−27dBs<br>12.5kHz→VRG01<br>→−25dBs |
| 3 | Analog/digital (A/D) adjustment | ON | ON | ON | ON | 54 | STOP<br>↓<br>PRESET<br>↓<br>START ON | ②<br>RUNL |  | VRG05<br>A/D counter value<br>64 |
| 4 | Check of sensitivity and middle frequency EQ switching. | ON | ON | ON | ON | 54 | STOP<br>↓<br>PRESET<br>↓<br>START<br>↓<br>REC/PAUSE | ② RUNL<br>⑧ BIAS CONT | $\boxed{111}$ OUT Lch<br>$\boxed{211}$ OUT Rch<br>(Stepped form with the E. voltmeter) |  SENS<br>M EQ<br>1kHz<br>4kHz<br>Preset<br>15 ...... 00 ... 7 |
| 5 | Check of high frequency EQ switching | ON | ON | ON | ON | 54 | STOP<br>↓<br>PRESET<br>↓<br>START<br>↓<br>REC/PAUSE | ② RUNL<br>⑧ BIAS COT. | REC head current<br>(Stepped form with the E. voltmeter) |  |
| 6 | CPU playback gain adjustment. | ON/OFF<br>ON-Lch<br>OFF-Rch | ON | OFF | OFF | 53 | 1. STOP<br>2. Apply the 1kHz<br>3. Push the AR switch<br>4. START SW "ON"<br>5. Release AR switch<br>6. PLAY button "ON" | ② RUNL<br>⑨ RUNL<br>↓<br>LINE OUT<br>−4dB | $\boxed{55}$ | VR151<br>VR251<br>−7.5dBs |

## Adjustment Procedure

### 1. Check of computer preset operation

(Checker: MONITOR, TEST. SW1 and SW2 switches each at OFF)

Confirm by the checker's LED that the respective bits meet the following values in each tape position.

| | BIAS | SENS | M. EQ | H. EQ L/R |
|---|---|---|---|---|
| Normal | 6 | 7 | 3 | 4 |
| FeCr | 6 | 8 | 3 | 5 |
| Metal | 9 | 8 | 4 | 11 |
| $CrO_2$ | 6 | 7 | 3 | 5 |

Note: Fe-Cr position; Tape select SW at $CrO_2$ with Normal or FeCr.
$CrO_2$ position; Tape select SW at $CrO_2$ with $CrO_2$.

### 2. Computer osillation adjustment

(Checker: MONITOR and TEST switches at ON, SW1 and SW2 at OFF
DD-99: Remove ② RUNL.)

In DD-99, with the mechanism kept in the STOP mode, push the PRESET switch and then the START switch. Thereby, the OSC switching program starts. When continuing pressing the START switch, the given mode is held. In the switching operation, frequencies are repeatedly emitted in the order of 1 kHz → 4 kHz → 8.3 kHz → 12.5 kHz → 1 kHz at intervals of about 1.5 sec.

Connect an electronic voltmeter to tag $\boxed{55}$ (A/D IN) of the computer board, then adjust the level at each frequency using a following semi-fixed VR.

| Frequency | Semi-fixed VR | Adjustment Value |
|---|---|---|
| 1 kHz | VRG04 | −27 dBs |
| 4 kHz | VRG03 | −28 dBs |
| 8.3 kHz | VRG02 | −27 dBs |
| 12.5 khz | VRG01 | −25 dBs |

### 3. Analog/digital (A/D) adjustment

(checker: MONITOR, TEST SW1 and SW2 at ON:
DD-99: Remove ② RUNL)

In DD-99, with the mechanism held in the STOP mode, push the PRESET switch and then keep pressing the START switch to confirm that the A/D counter operates normally. Connect an oscilloscope to test point A/D TP to confirm that the waveform shown appears.

Adjust VRG05, then confirm by the checker's A/D counter LED that the A/D counter become 64.

When releasing the START switch, the mechanism enters into the next SENS switching operation.

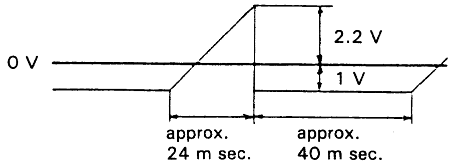


Fig. 9

### 4. Sensitivity and middle frequency EQ switching

(Checker: MONITOR, TEST, SW1 and SW2 at ON
DD-99: Remove ② RUNL)

In DD-99, with the mechanism held in the STOP mode, push the PRESET switch and then the START switch to obtain the REC/PAUSE mode. Thereupon, confirm that the checker's SENS LED counters from 15 to 0 and then the E QM LED counts from 0 to 7.

When the E QM count is completed, the count returns to SENS again. This process is repeated. Remove post pin 8, then connect a value voltmeter to tags $\boxed{111}$ Lch and $\boxed{211}$ Rch to confirm that the output changes in steps.

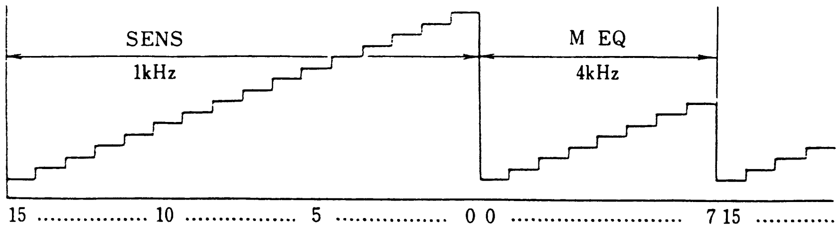


Fig. 10

### 5. High frequency EQ switching

(Checker: MONITOR, TEST and SW2 at ON, SW1 at OFF,
DD-99: Remove ② RUNL, and ⑧ BIAS CONT)

In DD-99, push the PRESET switch and then the START switch to confirm that the checker's H EQ (Lch and Rch both) LED switches from 0 to 15 continuously. Next, enter the deck into the REC/PAUSE mode, remove post pin ⑧ BIAS CONT and confirm that the REC head current changes in steps.

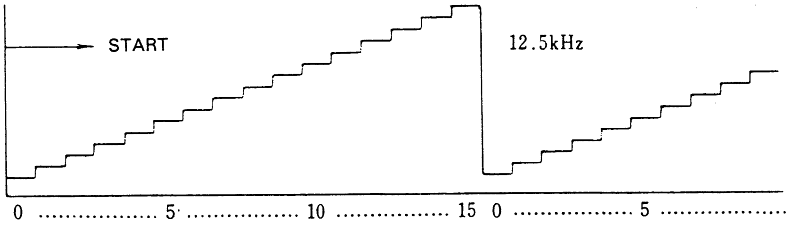


Fig. 11

### 6. Computer PB gain adjustment

(Checker: TEST SW at ON, SW1 and SW2 at OFF, and MONITOR SW at ON/OFF
DD-99: Remove ② RUN L)

In DD-99, push ON the 1 kHz reference tape from the STOP mode. Push up the AR (REC fordid) switch (to obtain the same condition as loaded with a cassette having a tab), push ON the START switch, then confirm that the deck enters into the test program mode (in which the PRESET LED of DD-99 goes out). Subsequently, release the AR switch. Next, remove post pin 9 (RUN L) on the computer board, and confirm that the output of LINE OUT is −4 dBs. Then, reconnect this pin, connect an electronic voltmeter to tag $\boxed{55}$ on the computer board, and adjust VR151 and VR251 on the main amplifier PW Board so that the output is −10.5 dBs. Lch emits the output with the MONITOR switch of checker at ON. while Rch emits the output with it at OFF.

### 7. REC/PB check of computer switching operation

(Check: selection of test program for each operation mode.
DD-99: Remove ② RUN L, and ⑨ RUN L.)

Supply to LINE IN of DD-99 the signal of the frequency corresponding to each test program.

For each operation mode, push ON the PRESET switch and then the START switch to obtain the REC/PLAY mode. Thereupon, play back the recorded signal of the tape to check it. The Normal tape is used with the NR switch at OFF.

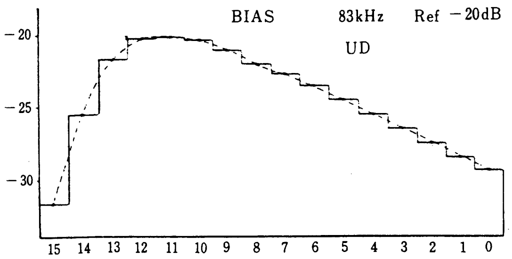


Fig. 12A BIAS

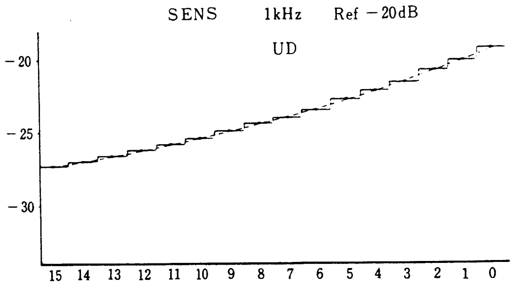


Fig. 12B SENS

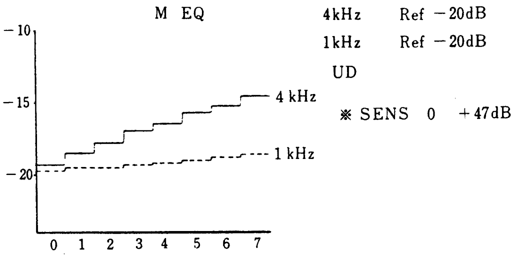


Fig. 12C M. EQ

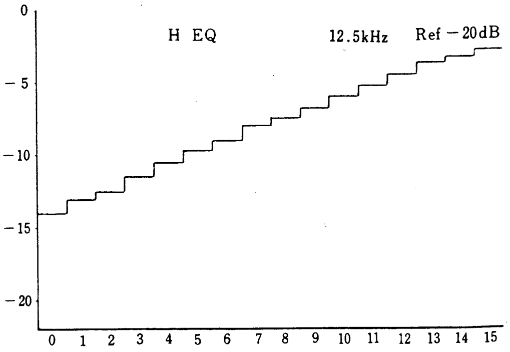


Fig. 12D H. EQ

# Block Diagram

## Mecha. Control Circuit

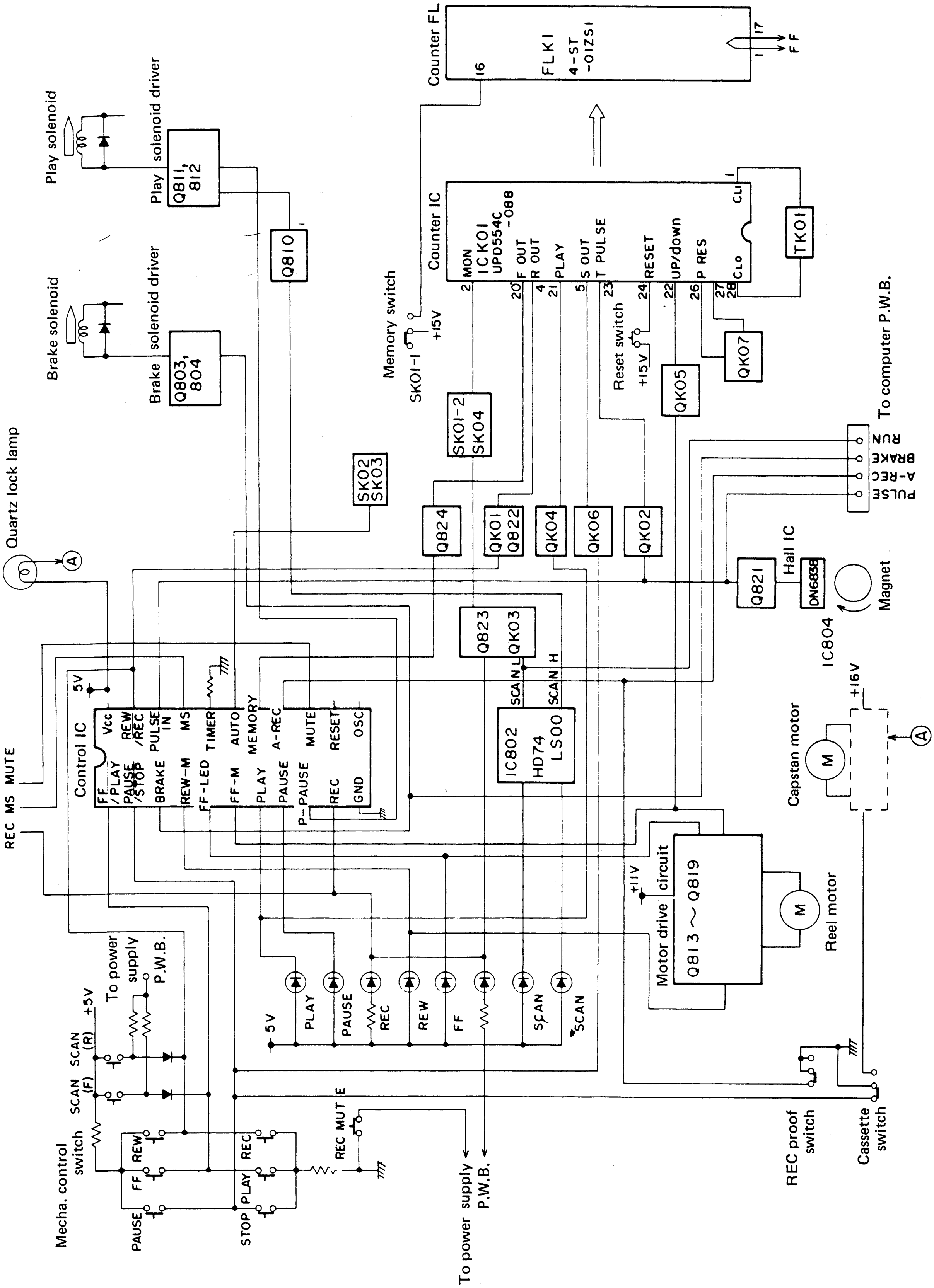

Play solenoid
Play solenoid driver
Q811, 812
Brake solenoid
Brake solenoid driver
Q803, 804
Q810
Quartz lock lamp
A
Memory switch
SK01-1
+15V
Counter IC
IC K01 UPD554C -088
MON
F OUT
R OUT
PLAY
S OUT
T PULSE
RESET
UP/down
P RES
CLI
CLO
2
20
4
21
5
23
24
22
26
27
28
1
16
17
Counter FL
FLK1 4-ST -01ZS1
F F
TK01
QK07
Reset switch
+15V
QK05
To computer P.W.B.
RUN
BRAKE
A-REC
PULSE
SK01-2 SK04
SK02 SK03
Q824
QK01 Q822
QK04
QK06
QK02
Hall IC
Q821
DN6838
IC804
Magnet
Q823 QK03
SCAN L
SCAN H
IC802 HD74 LS00
Control IC
5V
Vcc
REW /REC
PULSE IN
MS
TIMER
AUTO
MEMORY
A-REC
MUTE
RESET
OSC
FF /PLAY
PAUSE /STOP
BRAKE
REW-M
FF-LED
FF-M
PLAY
PAUSE
P-PAUSE
REC
GND
REC MS MUTE
Capstan motor
M
+16V
+11V
Motor drive circuit
Q813 ~ Q819
Reel motor
5V
PLAY
PAUSE
REC
REW
FF
SCAN
SCAN
To power supply P.W.B.
SCAN (F)
SCAN (R)
+5V
Mecha. control switch
REW
FF
PAUSE
STOP
PLAY
REC
REC MUTE
To power supply P.W.B.
REC proof switch
Cassette switch

Fig. 13

## Recording, Playback and Computer circuit

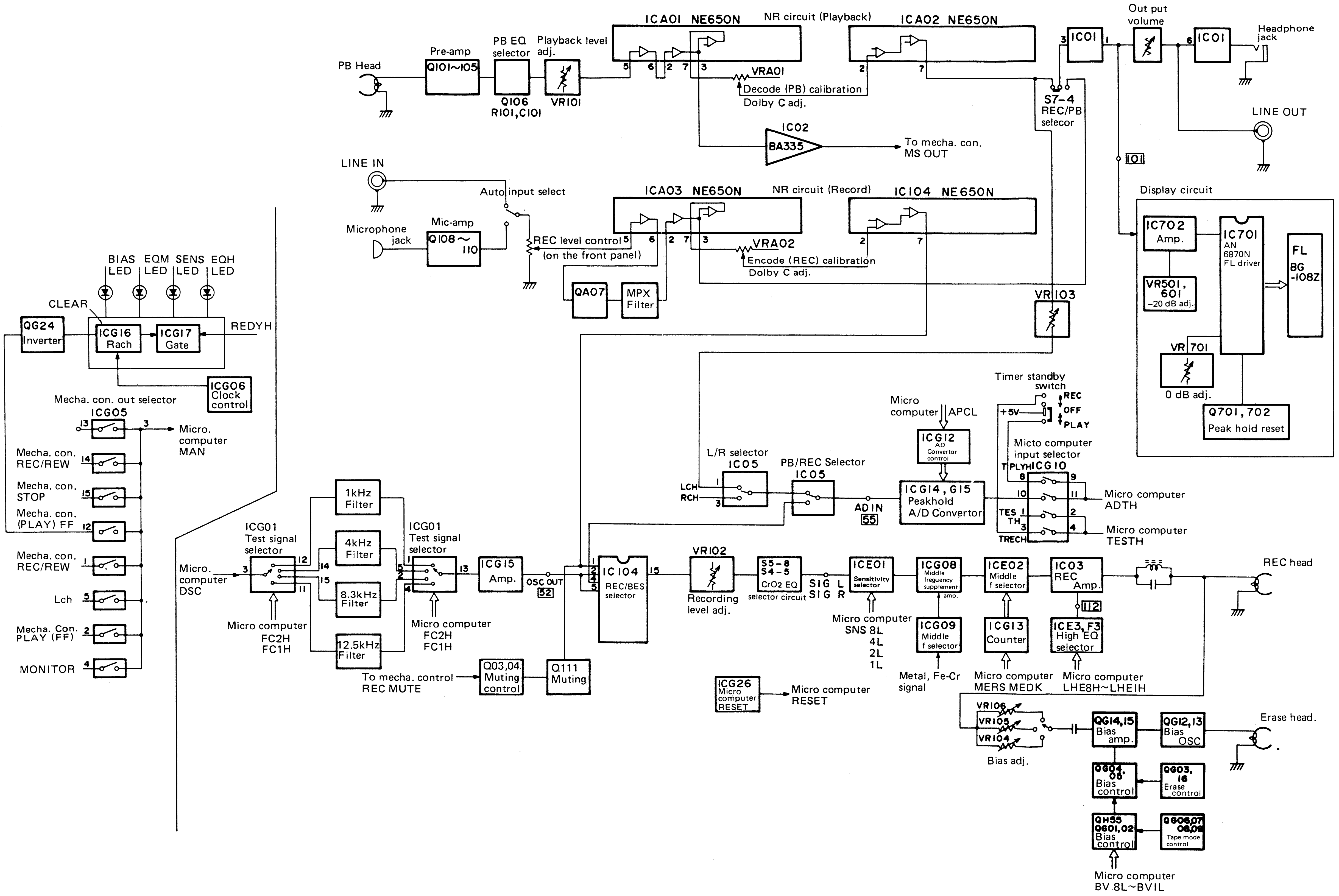
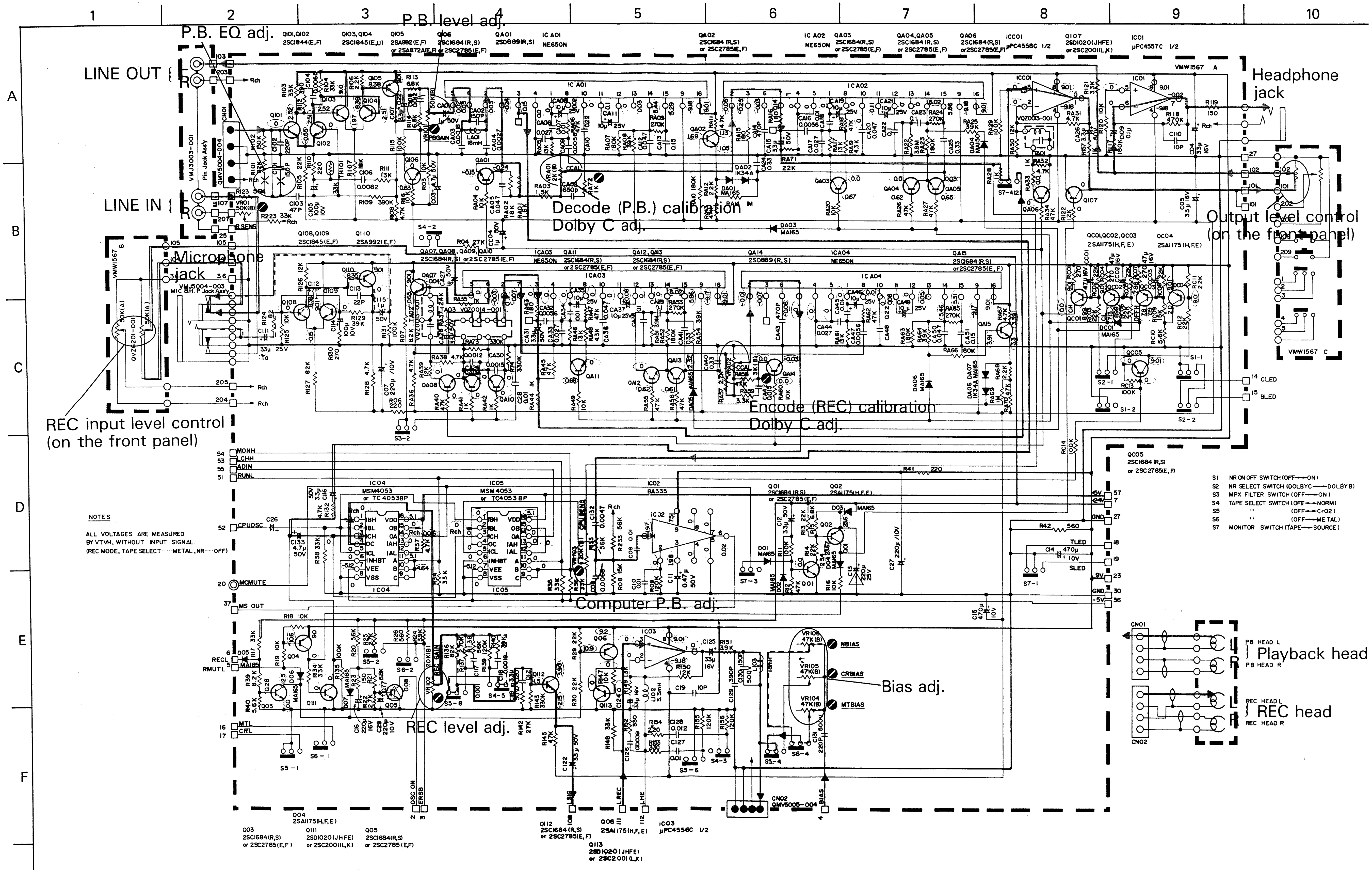

PB Head
Pre-amp
Q101~105
PB EQ selector
Q106
R101,C101
Playback level adj.
VR101
ICA01 NE650N
NR circuit (Playback)
ICA02 NE650N
VRA01
Decode (PB) calibration
Dolby C adj.
IC02
BA335
To mecha. con. MS OUT
IC01
S7-4
REC/PB selecor
Out put volume
Headphone jack
LINE OUT
101
LINE IN
Auto input select
Microphone jack
Mic-amp
Q108~110
REC level control
(on the front panel)
ICA03 NE650N
NR circuit (Record)
IC104 NE650N
VRA02
Encode (REC) calibration
Dolby C adj.
QA07
MPX Filter
VR103
Display circuit
IC702 Amp.
VR501, 601
-20 dB adj.
IC701 AN 6870N FL driver
FL BG -108Z
VR701
0 dB adj.
Q701,702
Peak hold reset
BIAS LED
EQM LED
SENS LED
EQH LED
CLEAR
QG24 Inverter
ICG16 Rach
ICG17 Gate
REDYH
ICG06 Clock control
Mecha. con. out selector
ICG05
Micro. computer MAN
Mecha. con. REC/REW
Mecha. con. STOP
Mecha. con. (PLAY) FF
Mecha. con. REC/REW
Lch
Mecha. Con. PLAY (FF)
MONITOR
Timer standby switch
REC
OFF
PLAY
+5V
Micro computer
APCL
ICG12
AD Convertor control
L/R selector
IC05
PB/REC Selector
IC05
LCH
RCH
AD IN
55
ICG14, G15
Peakhold A/D Convertor
Micto computer input selector
ICG10
PLYH
TES
TH
TRECH
Micro computer ADTH
Micro computer TESTH
1kHz Filter
4kHz Filter
8.3kHz Filter
12.5kHz Filter
ICG01 Test signal selector
Micro. computer DSC
Micro computer FC2H FC1H
ICG15 Amp.
OSC OUT
52
IC104 REC/BES selector
Q03,04 Muting control
Q111 Muting
To mecha. control REC MUTE
VR102
Recording level adj.
S5-8
S4-5
CrO2 EQ
selector circuit
SIG L
SIG R
ICE01 Sensitivity selector
Micro computer SNS 8L 4L 2L 1L
ICG08 Middle frequency supplement amp.
ICG09 Middle f selector
Metal, Fe-Cr signal
ICE02 Middle f selector
ICG13 Counter
Micro computer MERS MEDK
IC03 REC Amp.
112
ICE3, F3 High EQ selector
Micro computer LHE8H~LHEIH
REC head
ICG26 Micro computer RESET
Micro computer RESET
VR106
VR105
VR104
Bias adj.
QG14,15 Bias amp.
QG12,13 Bias OSC
Erase head.
QG04, 05 Bias control
QG03, 16 Erase control
QH55 QG01,02 Bias control
QG06,07 08,09 Tape mode control
Micro computer BV 8L~BVIL

Fig. 14

# Standard Schematic Diagram of DD-99 (Main amplifier circuit)


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
P.B. EQ adj.
P.B. level adj.
LINE OUT { L R
LINE IN { L R
Headphone jack
Microphone jack
VMJ5004-003 MIC &H. P Jack Assy
Decode (P.B.) calibration Dolby C adj.
Output level control (on the front panel)
REC input level control (on the front panel)
Encode (REC) calibration Dolby C adj.
Computer P.B. adj.
Bias adj.
REC level adj.
NBIAS
CRBIAS
MTBIAS
PB HEAD L
PB HEAD R
} Playback head
REC HEAD L
REC HEAD R
} REC head
IC A01 NE650N
IC A02 NE650N
ICA03 NE650N
ICA04 NE650N
IC04 MSM4053 or TC4053BP
IC05 MSM4053 or TC4053BP
IC02 BA335
IC03 μPC4556C 1/2
ICC01 μPC4558C 1/2
IC01 μPC4557C 1/2
Q04 2SA1175(H,F,E)
Q03 2SC1684(R,S) or 2SC2785(E,F)
Q111 2SD1020(JHFE) or 2SC2001(L,K)
Q05 2SC1684(R,S) or 2SC2785(E,F)
Q112 2SC1684(R,S) or 2SC2785(E,F)
Q06 2SA1175(H,F,E)
Q113 2SD1020(JHFE) or 2SC2001(L,K)
QC05 2SC1684(R,S) or 2SC2785(E,F)
CLED
BLED
TLED
SLED
MONH
LCHH
ADIN
RUNL
CPUOSC
MCMUTE
MS OUT
RECL
RMUTL
MTL
CRL
OSC ON
ERSB
LREC
LHE
BIAS
CN01
CN02
VMW1567 A
VMW1567 B
VMW1567 C

S1 NR ON OFF SWITCH (OFF ←→ ON)
S2 NR SELECT SWITCH (DOLBY C ←→ DOLBY B)
S3 MPX FILTER SWITCH (OFF ←→ ON)
S4 TAPE SELECT SWITCH (OFF ←→ NORM)
S5 " (OFF ←→ CrO2)
S6 " (OFF ←→ METAL)
S7 MONITOR SWITCH (TAPE ←→ SOURCE)

NOTES

ALL VOLTAGES ARE MEASURED BY VTVH, WITHOUT INPUT SIGNAL. (REC MODE, TAPE SELECT ······ METAL, NR ······ OFF)

NOTES:

1. Unless otherwise specified, all resistors are 1/6W, ±5% carbon resistors. And all capacitors are 50V fixed ceramic capacitors or 50V mylar capacitors.
2. UF — Unflammable carbon resistor.
   MF — Metal film resistor.
   OMF — Oxided metal film resistor.
   Ta — Tantalum solid electrolytic capacitor.
   LL — +20% low leak current electrolytic capacitor.
   PP — Polypropylene capacitor.
   PS — Polystyrene capacitor.
   MM — Metallized mylar capacitor.
   NP — Non-polarized electrolytic capacitor.
3. Blue line shows the signal at playback. Red line shows the signal at recording, and +B circuits.
4. ⚠ parts are safety assurance parts. When replacing those parts, make sure to use the specified one.

Fig. 15

# Standard Schematic Diagram of DD-99 (Computer circuit)

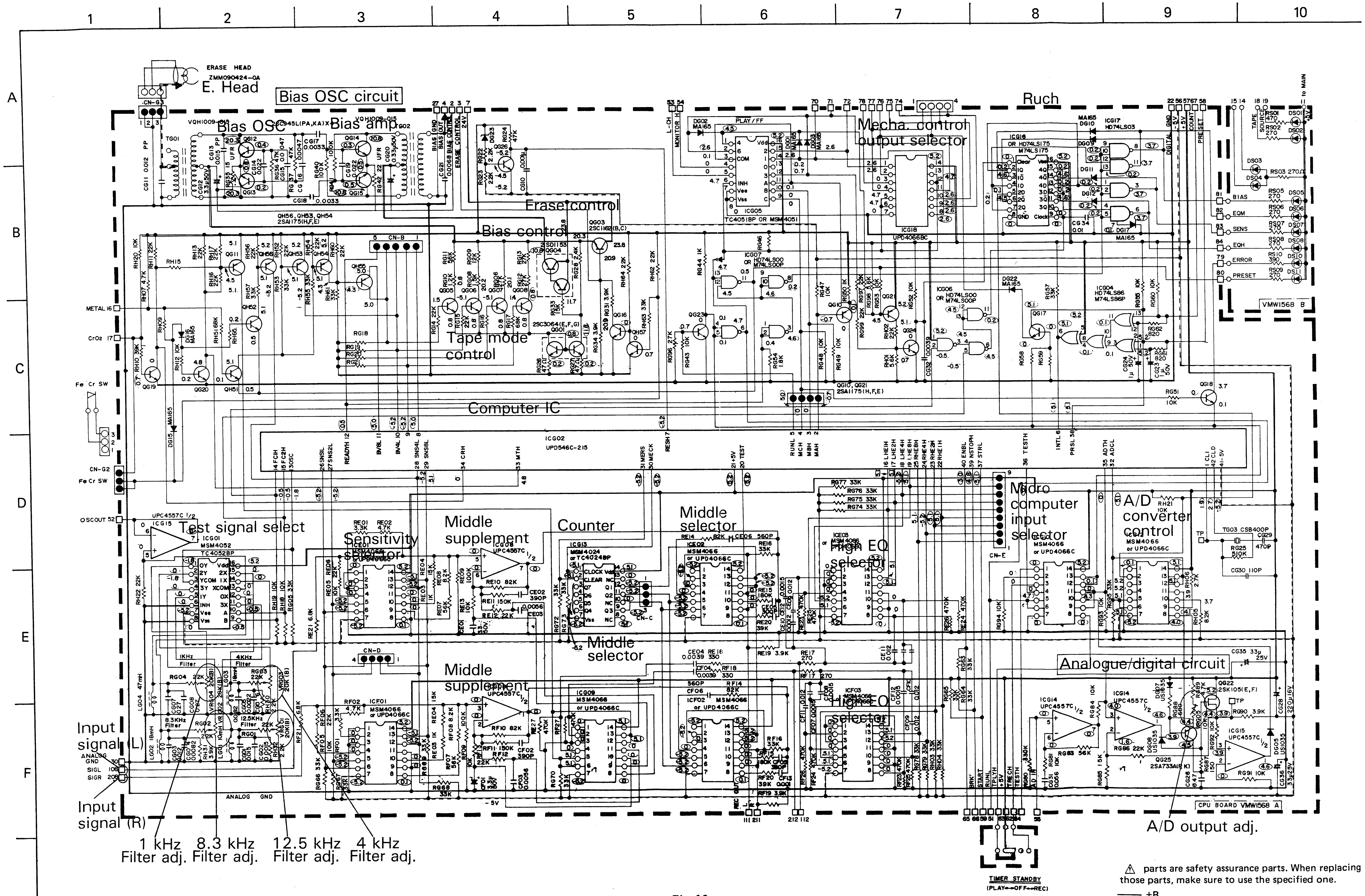

1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
ERASE HEAD
ZMM090424-0A
E. Head
Bias OSC circuit
Bias OSC
Bias amp
Erase control
Bias control
Tape mode control
Computer IC
ICG02
UPD546C-215
Mecha. control output selector
Ruch
Test signal select
Sensitivity selector
Middle supplement
Counter
Middle selector
High EQ selector
Micro computer input selector
A/D converter control
Analogue/digital circuit
A/D output adj.
Input signal (L)
Input signal (R)
1 kHz Filter adj.
8.3 kHz Filter adj.
12.5 kHz Filter adj.
4 kHz Filter adj.
METAL
CrO2
Fe Cr SW
OSCOUT
ANALOG GND
SIGL
SIGR
CPU BOARD VMW1568 A
VMW1568 B
TIMER STANDBY
(PLAY↔OFF↔REC)
to MAIN

Fig. 16

⚠ parts are safety assurance parts. When replacing those parts, make sure to use the specified one.

—— +B

# Standard Schematic Diagram of DD-99 (Mecha. control circuit)

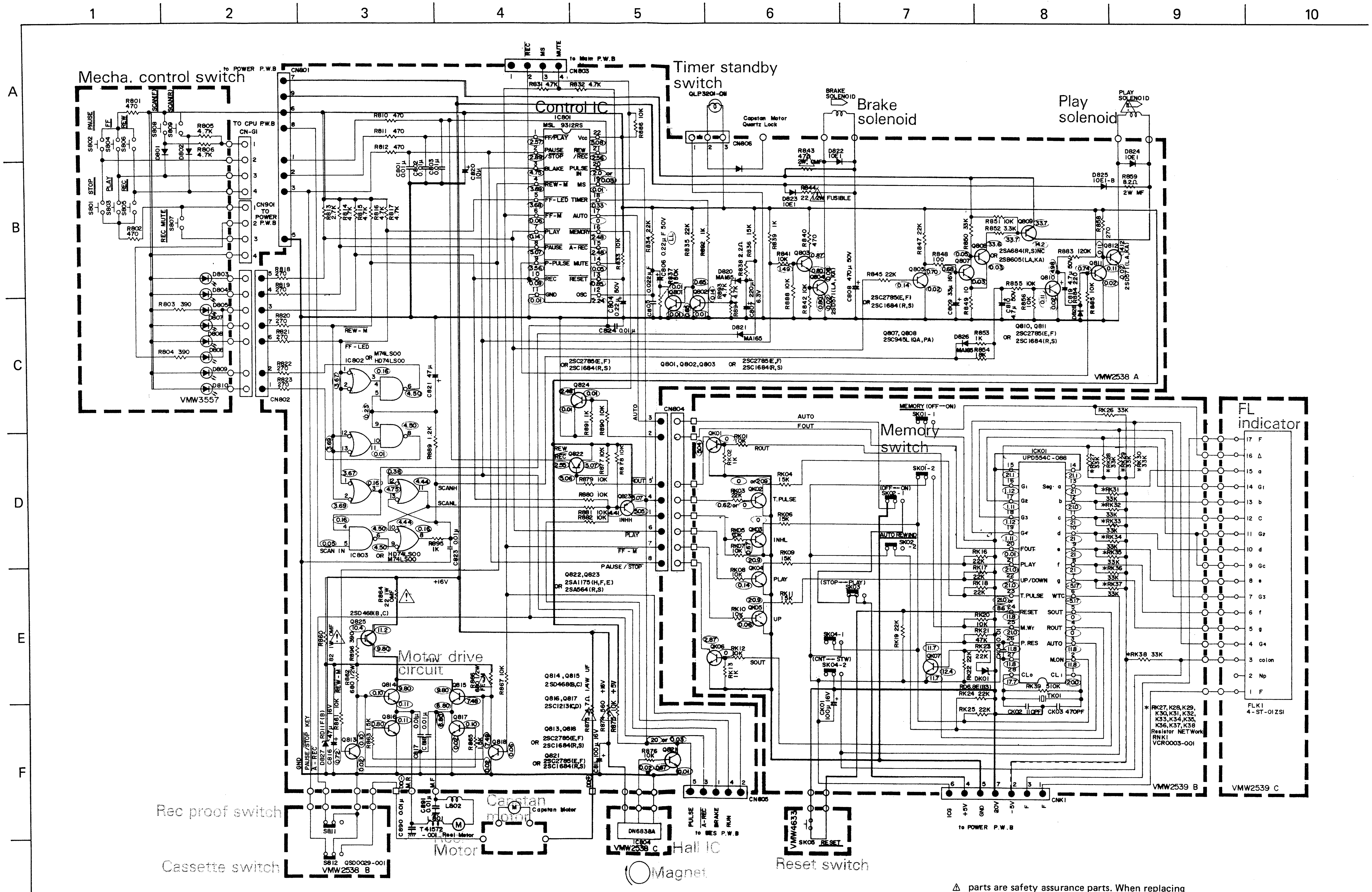
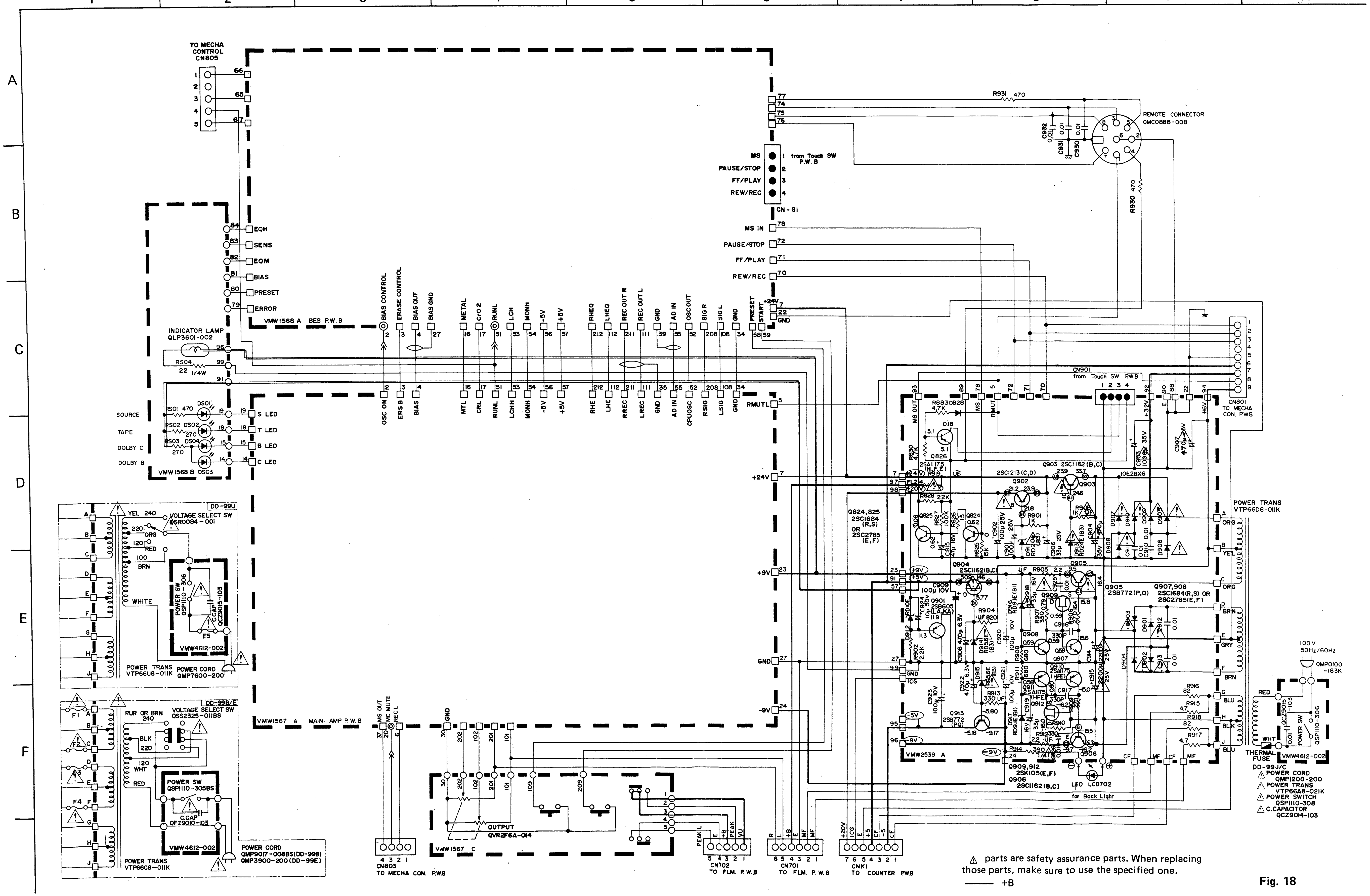

1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
Mecha. control switch
S801 STOP
S802 PAUSE
S803 PLAY
S804 FF
S805 REC
S806 REW
S807 REC MUTE
S808 SCAN(F)
S809 SCAN(R)
VMW3557
to POWER P.W.B
CN801
TO CPU P.W.B CN-G1
CN901 TO POWER P.W.B
CN802
REC
MS
to Main P.W.B
CN803
Timer standby switch
QLP3201-OM
CN806
Capstan Motor Quartz Lock
BRAKE SOLENOID
Brake solenoid
PLAY SOLENOID
Play solenoid
Control IC
IC801
MSL 9312RS
FF/PLAY
PAUSE /STOP
BLAKE
REW-M
FF-LED
FF-M
PLAY
PAUSE
P-PULSE
REC
GND
Vcc
REW /REC
PULSE IN
MS
TIMER
AUTO
MEMORY
A-REC
MUTE
RESET
OSC
IC802 M74LS00 OR HD74LS00
IC803 OR HD74LS00 M74LS00
SCANH
SCANL
SCAN IN
Q801, Q802, Q803 OR 2SC2785(E,F) 2SC1684(R,S)
Q807, Q808 2SC945L (QA,PA)
Q810, Q811 2SC2785(E,F) OR 2SC1684(R,S)
2SA684(R,S)NC OR 2SB605(LA,KA)
2SD571(LA,KA)
VMW2538 A
Q822, Q823 2SA1175(H,F,E) OR 2SA564(R,S)
CN804
AUTO
FOUT
ROUT
T.PULSE
INHL
PLAY
UP
SOUT
Memory switch
MEMORY (OFF—ON) SK01-1
SK01-2
(OFF—ON) SK02-1
AUTO REWIND SK02-2
(STOP—PLAY) SK03
SK04-1
(CNT—STW) SK04-2
ICK01
UPD554C-088
FOUT
PLAY
UP/DOWN
T.PULSE
RESET
M.Wr
P.RES
CLo
SOUT
ROUT
AUTO
M.ON
CL1
*RK27, K28, K29, K30, K31, K32, K33, K34, K35, K36, K37, K38 Resistor NETWork RNK1 VCR0003-001
FL indicator
FLK1
4-ST-01ZSI
VMW2539 B
VMW2539 C
CNK1
to POWER P.W.B
2SD468(B,C)
Motor drive circuit
Q814, Q815 2SD468(B,C)
Q816, Q817 2SC1213(C,D)
Q813, Q818 OR 2SC2785(E,F) 2SC1684(R,S)
Q821 OR 2SC2785(E,F) 2SC1684(R,S)
GND
PAUSE/STOP KEY
A-REC
CN805
PULSE
A-REC
BRAKE
RUN
to MS P.W.B
Rec proof switch
S811
S812 QSD0029-001
VMW2538 B
Cassette switch
Capstan motor
Capstan Motor
T41572 - 001 Reel Motor
Reel Motor
DN6838A
IC804
VMW2538 C
Hall IC
Magnet
VMW4633
SK05 RESET
Reset switch

Fig. 17

⚠ parts are safety assurance parts. When replacing those parts, make sure to use the specified one.

——— +B

# Standard Schematic Diagram of DD-99 (Overall circuit)


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
TO MECHA CONTROL CN805
EQH
SENS
EQM
BIAS
PRESET
ERROR
VMW1568 A BES P.W.B
INDICATOR LAMP QLP3601-002
RS04 22 1/4W
SOURCE
TAPE
DOLBY C
DOLBY B
VMW1568 B DS03
S LED
T LED
B LED
C LED
BIAS CONTROL
ERASE CONTROL
BIAS OUT
BIAS GND
METAL
CrO 2
RUNL
LCH
MONH
-5V
+5V
RHEQ
LHEQ
REC OUT R
REC OUT L
GND
AD IN
OSC OUT
SIG R
SIG L
PRESET
START
OSC ON
ERS B
MTL
CRL
LCHH
MONH
RHE
LHE
RREC
LREC
CPUOSC
RSIG
LSIG
RMUTL
MS
PAUSE/STOP
FF/PLAY
REW/REC
from Touch SW P.W.B
CN-G1
MS IN
+24V
GND
+9V
-9V
R931 470
REMOTE CONNECTOR QMC0888-008
R930 470
CN901 from Touch SW. PWB
CN801 TO MECHA CON. P.W.B
POWER TRANS VTP66D8-011K
Q824,825 2SC1684 (R,S) OR 2SC2785 (E,F)
Q903 2SC1162 (B,C)
2SC1213 (C,D)
Q902
Q904 2SC1162(B,C)
Q905
Q906 2SB772(P,Q)
Q907,908 2SC1684(R,S) OR 2SC2785(E,F)
Q909,912 2SK105(E,F)
Q906 2SC1162(B,C)
10E2BX6
VMW2539 A
LED LCD702 for Back Light
THERMAL FUSE
WHT
RED
POWER SW QSP1110-306
VMW4612-002
100V 50Hz/60Hz
QMP0100-183K
DD-99J/C
⚠ POWER CORD QMP1200-200
⚠ POWER TRANS VTP66A8-021K
⚠ POWER SWITCH QSP1110-308
⚠ C.CAPACITOR QCZ9014-103
DD-99U
YEL 240
VOLTAGE SELECT SW QSR0084-001
220 ORG
120 RED
100 BRN
WHITE
POWER SW QSP1110-306
C.CAP QCZ9015-103
VMW4612-002
POWER TRANS VTP66U8-011K
POWER CORD QMP7600-200
DD-99B/E
PUR OR BRN 240
VOLTAGE SELECT SW QSS2325-011BS
BLK 220
120 WHT
RED
POWER SW QSP1110-305BS
C.CAP QFZ9010-103
VMW4612-002
POWER TRANS VTP66C8-011K
POWER CORD QMP9017-008BS(DD-99B) QMP3900-200(DD-99E)
VMW1567 A MAIN AMP P.W.B
MS OUT
MC MUTE
REC L
CN803 TO MECHA CON. P.W.B
OUTPUT QVR2F6A-014
VMW1567 C
PEAK L
PEAK
VU
CN702 TO FLM. P.W.B
CN701 TO FLM. P.W.B
CNK1 TO COUNTER PWB

⚠ parts are safety assurance parts. When replacing those parts, make sure to use the specified one.

—— +B

Fig. 18

## Display circuit

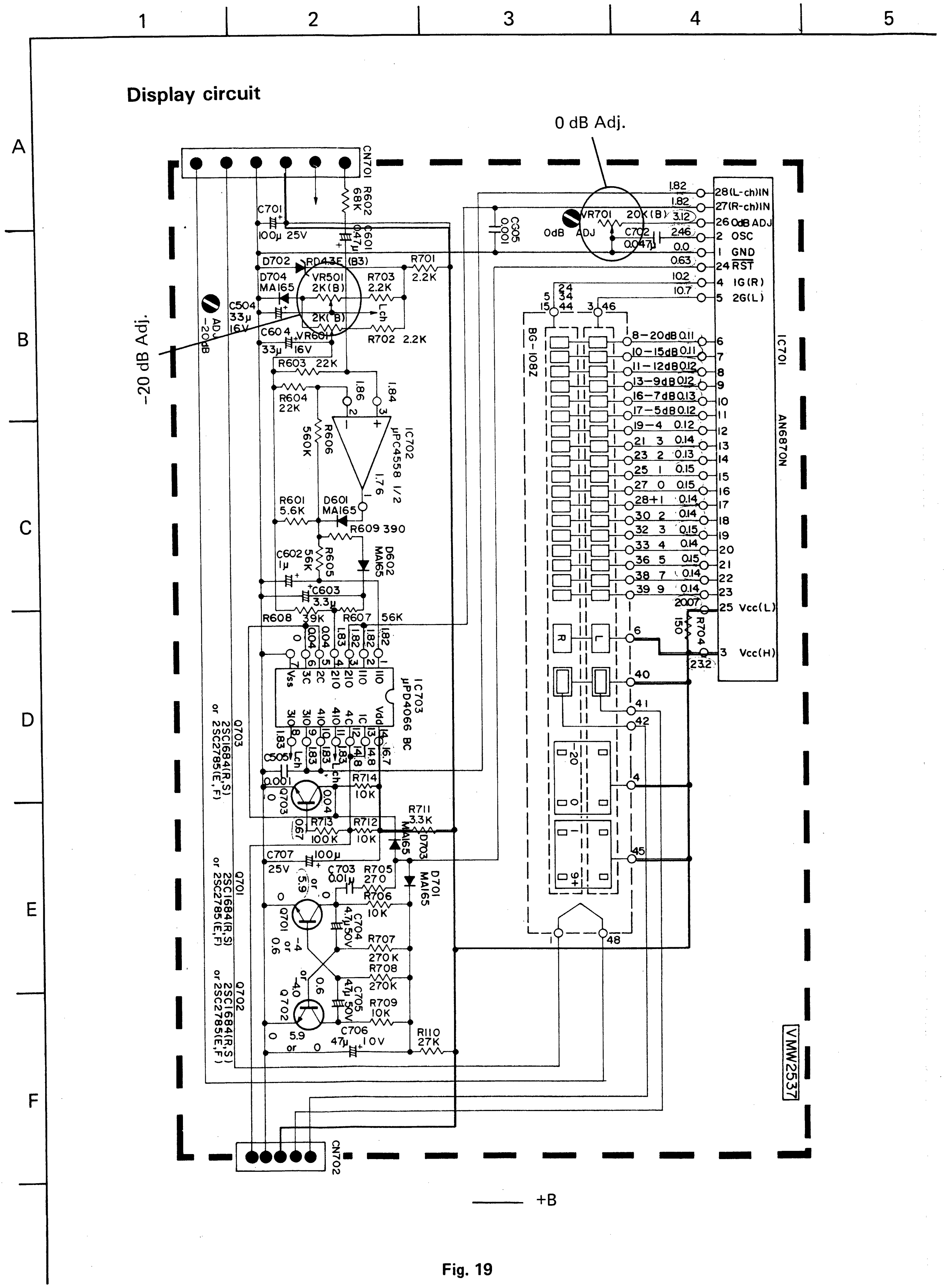

1
2
3
4
5
A
B
C
D
E
F
0 dB Adj.
-20 dB Adj.
ADJ. -20dB
CN701
CN702
R602 68K
C601 0.47μ
C701 100μ 25V
D702 RD4.3E (B3)
R701 2.2K
D704 MA165
VR501 2K(B)
R703 2.2K
C504 33μ 16V
C604 33μ 16V
VR601 2K(B)
R702 2.2K
R603 22K
R604 22K
R606 560K
IC702 μPC4558 1/2
R601 5.6K
D601 MA165
R609 390
C602 1μ
R605 56K
D602 MA165
C603 3.3μ
R608 39K
R607 56K
IC703 μPD4066 BC
Q703 2SC1684(R,S) or 2SC2785(E,F)
C505 0.01
R714 10K
R713 100K
R712 10K
R711 3.3K
D703 MA165
C707 100μ 25V
C703 0.01μ
R705 270
R706 10K
D701 MA165
C704 4.7μ 50V
Q701 2SC1684(R,S) or 2SC2785(E,F)
R707 270K
R708 270K
C705 4.7μ 50V
R709 10K
Q702 2SC1684(R,S) or 2SC2785(E,F)
C706 47μ 10V
R110 27K
C605 0.001
0dB ADJ
VR701 20K(B)
C702 0.047μ
BG-1082
IC701 AN6870N
28(L-ch)IN
27(R-ch)IN
26 0dB ADJ
2 OSC
1 GND
24 RST
4 1G(R)
5 2G(L)
8 -20dB
10 -15dB
11 -12dB
13 -9dB
16 -7dB
17 -5dB
19 -4
21 3
23 2
25 1
27 0
28 +1
30 2
32 3
33 4
36 5
38 7
39 9
25 Vcc(L)
3 Vcc(H)
R704 150
R
L
40
41
42
45
48
VMW2537
+B

Fig. 19

## Voltage measured value

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ICG01 | E. Voltmeter | −1.8 | 0 | −1.8 | 0 | 0 | 0 | −5.2 | 0 | −0.5 | −0.5 | 0 | 0 | 0 | 0 | 0 | 5.2 |
| | C. Tester | −1.45 | 0 | −1.45 | 0 | 0 | 0 | −5.1 | 0 | −0.51 | −0.51 | 0 | 0 | 0 | 0 | 0 | 5.1 |
| ICG02 | E. Voltmeter | 1.9 | −0.7 | 0 | 0 | 5.0 | 5.1 | −5.2 | 5.0 | −5.2 | −5.2 | 5.0 | 0.5 | −1.8 | −0.5 | −0.5 | 5.1 |
| | C. Tester | 2.05 | −0.63 | 0 | 0 | 5.0 | 4.5 | −5.1 | 5.0 | −4.7 | −4.7 | 4.9 | 0.4 | −1.45 | 0.51 | 0.51 | 5.0 |
| | | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** | **26** | **27** | **28** | **29** | **30** | **31** | **32** |
| | E. Voltmeter | 5.1 | −5.2 | 5.1 | 5.2 | 5.2 | 5.1 | 5.1 | −5.2 | 5.1 | −5.2 | −5.2 | −5.2 | 5.1 | −5.2 | −5.2 | 5.1 |
| | C. Tester | 5.0 | −4.5 | 5.0 | 5.1 | 5.1 | 5.0 | 5.0 | −4.5 | 5.0 | −4.5 | −4.5 | −4.5 | 5.0 | −4.4 | −4.4 | 5.0 |
| | | **33** | **34** | **35** | **36** | **37** | **38** | **39** | **40** | **41** | **42** | | | | | | |
| | E. Voltmeter | 4.8 | 0 | 0 | 0 | 5.1 | 5.1 | 4.8 | 3.0 | −5.2 | 2.7 | | | | | | |
| | C. Tester | 4.5 | 0 | 0 | 0 | 4.4 | 4.8 | 4.8 | 3.0 | −5.1 | 0.2 | | | | | | |
| ICG04 | E. Voltmeter | 5.2 | 5.2 | 0.1 | 0.2 | 5.2 | 5.1 | 0 | 0.1 | 0.1 | 0.1 | 0.1 | ~ | ~ | 5.2 | | |
| | C. Tester | 4.8 | 4.8 | 0.13 | 0.14 | 5.1 | 4.5 | 0 | 0.14 | 0.13 | 0.13 | 0.14 | 0.8 ~ 1.8 | 0.8 ~ 1.8 | 5.1 | | |
| ICG05 | E. Voltmeter | 4.5 | 2.6 | 0.1 | 0 | 0 | 4.7 | 0 | 0 | 0 | 0 | 0.1 | 0.7 | 0.2 | 2.6 | 2.6 | 5.2 |
| | C. Tester | 4.1 | 2.3 | 0.05 | 0 | 0 | 4.6 | 0 | 0 | 0 | 0 | 0 | 0.31 | 0 | 2.3 | 2.3 | 5.1 |
| ICG06 | E. Voltmeter | 5.2 | −0.5 | 4.5 | 4.5 | −0.5 | 4.5 | 0 | 0.1 | 1.3 | 1.3 | 0.2 | 4.5 | 4.5 | 5.2 | | |
| | C. Tester | 5.1 | −0.51 | 4.4 | 4.3 | 0.51 | 4.4 | 0 | 0.14 | 1.15 | 1.15 | 0.16 | 4.4 | 4.4 | 5.1 | | |
| ICG07 | E. Voltmeter | 0.4 | 0.4 | 4.6 | 0.1 | 0.1 | 4.7 | 0 | 0.2 | 4.6 | 4.6 | 0.5 | 4.5 | 4.7 | 5.1 | | |
| | C. Tester | 0.4 | 0.4 | 4.4 | 0.04 | 0.04 | 4.9 | 0 | 0.18 | 4.4 | 4.4 | 0.44 | 4.4 | 4.8 | 5.1 | | |
| ICF01<br>ICE02 | E. Voltmeter | 0 | 0 | 0 | 0 | −5.2 | −5.2 | −5.2 | 0.1 | 0 | 0 | 0 | −5.2 | −5.1 | 5.2 | | |
| | C. Tester | 0 | 0 | 0 | 0 | −5.1 | −5.1 | −5.1 | 0 | 0 | 0 | 0 | −5.1 | −5.1 | 5.1 | | |
| ICG08 | E. Voltmeter | 0 | 0 | 0 | −5.2 | 0 | 0 | 0 | 5.2 | | | | | | | | |
| | C. Tester | 0 | 0 | 0 | −5.2 | 0 | 0 | 0 | 5.1 | | | | | | | | |
| ICG09 | E. Voltmeter | 0 | 0 | 0 | 0 | 5.1 | 5.1 | −5.2 | 0 | 0 | 0 | 0 | 5.1 | 5.1 | 5.1 | | |
| | C. Tester | 0 | 0 | 0 | 0 | 5.1 | 5.1 | −5.1 | 0 | 0 | 0 | 0 | 5.1 | 5.1 | 5.1 | | |
| ICG10 | E. Voltmeter | 0 | 0 | 0 | 0 | 4.7 | 4.7 | 0 | 0 | 0 | 4.3 | 0 | 0.1 | 0.1 | 5.2 | | |
| | C. Tester | 0 | 0 | 0 | 0 | 4.6 | 4.6 | 0 | 0 | 0 | 4.1 | 0 | 0 | 0 | 5.1 | | |
| ICG12 | E. Voltmeter | 0 | 0.1 | 5.2 | 5.2 | 5.1 | 5.1 | −5.2 | 4.0 | 4.1 | 3.7 | 3.9 | 5.1 | 5.1 | 5.1 | | |
| | C. Tester | 0 | 0 | 5.1 | 5.1 | 5.1 | 5.1 | −5.2 | 4.0 | 4.0 | 3.7 | 3.9 | 5.1 | 5.1 | 5.1 | | |
| ICG13 | E. Voltmeter | −5.1 | −5.1 | −5.2 | −5.2 | −5.2 | −5.2 | −5.2 | 5.1 | −5.2 | 0 | −5.2 | −5.2 | 0 | 5.1 | | |
| | C. Tester | −4.5 | −4.5 | −5.1 | −5.1 | −5.1 | −5.1 | −5.1 | 5.1 | −5.1 | 0 | −5.1 | −5.1 | 0 | 5.1 | | |
| ICG14 | E. Voltmeter | 4.6 | 1.6 | 4.0 | −5.2 | 0 | 0 | 0 | 5.2 | | | | | | | | |
| | C. Tester | 4.5 | 1.35 | 4.0 | −5.1 | 0 | 0 | 0 | 5.1 | | | | | | | | |
| ICG15 | E. Voltmeter | 4.6 | 0 | 3.9 | −5.2 | 0 | 0 | 0 | 5.2 | | | | | | | | |
| | C. Tester | 4.5 | 0 | 3.7 | −5.1 | 0 | 0 | 0 | 5.1 | | | | | | | | |
| ICG16 | E. Voltmeter | 0 | 0.2 | 4.6 | 0.2 | 0.1 | 4.5 | 0.2 | 0 | 0 | 0 | 4.6 | 0.2 | 0.2 | 4.6 | 0.2 | 5.2 |
| | C. Tester | 0 | 0.17 | 4.4 | 0.17 | 0.09 | 4.3 | 0.17 | 0 | 0.15 | 0.15 | 4.4 | 0.17 | 0.17 | 4.3 | 0.17 | 5.1 |
| ICG17 | E. Voltmeter | 0.2 | 0.2 | 3.7 | 0.2 | 0.2 | 3.7 | 0.1 | 3.7 | 0.2 | 0.2 | 3.7 | 0.2 | 0.2 | 5.2 | | |
| | C. Tester | 0.17 | 0.17 | 3.5 | 0.17 | 0.17 | 3.5 | 0 | 3.5 | 0.17 | 0.17 | 3.5 | 0.17 | 0.17 | 5.1 | | |
| ICG18 | E. Voltmeter | 2.6 | 2.6 | 0 | 0 | 4.7 | 4.7 | 0 | 2.6 | 2.6 | 2.6 | 2.6 | 4.7 | 4.7 | 5.2 | | |
| | C. Tester | 2.6 | 2.5 | 0 | 0 | 4.6 | 4.6 | 0 | 2.5 | 2.5 | 2.5 | 2.5 | 4.6 | 4.6 | 5.1 | | |
| ICE02 | E. Voltmeter | −5.2 | −5.2 | 0 | 0 | −5.2 | −5.2 | −5.2 | 0.1 | 0 | 0 | 0 | −5.2 | −5.2 | 5.2 | | |
| | C. Tester | −5.1 | −5.1 | 0 | 0 | −5.1 | 5.1 | −5.1 | 0 | 0 | 0 | 0 | −5.1 | −5.1 | 5.1 | | |
| ICE03 | E. Voltmeter | 0 | 0 | 0 | 0 | −5.2 | 5.1 | −5.2 | 0 | 0 | 0 | 0 | −4.6 | 5.1 | 5.1 | | |
| | C. Tester | 0 | 0 | 0 | 0 | −4.6 | 5.1 | −5.1 | 0 | 0 | 0 | 0 | 5.1 | 5.1 | 5.1 | | |
| ICF03 | E. Voltmeter | 0 | 0 | 0 | 0 | 5.1 | 5.1 | −5.2 | 0 | 0 | 0 | 0 | −5.2 | 5.1 | 5.2 | | |
| | C. Tester | 0 | 0 | 0 | 0 | 5.1 | 5.1 | −5.1 | 0 | 0 | 0 | 0 | −4.6 | 5.1 | 5.1 | | |

| | E. Voltmeter | | | C. Tester (20kΩ/V) | | | | E. Voltmeter | | | C. Tester (20kΩ/V) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **E** | **C** | **B** | **E** | **C** | **B** | | **E** | **C** | **B** | **E** | **C** | **B** |
| QG01 | 0.2 | 0.8 | 0.8 | 0.17 | 0.78 | 0.78 | QG18 | 0.1 | 3.7 | 0 | 0.04 | 3.0 | 0 |
| QG02 | 0.2 | 11.8 | 0.8 | 0.18 | 12.0 | 0.78 | QG19 | 0 | 0 | 0.7 | 0 | 0.03 | 0.61 |
| QG03 | 20.3 | 23.8 | 20.9 | 20.0 | 23.5 | 21.0 | QG20 | 0 | 4.8 | 0.2 | 0 | 4.5 | 0 |
| QG04 | 10.8 | 23.8 | 11.7 | 11.0 | 23.5 | 11.8 | QG21 | 5.2 | 5.1 | 4.5 | 5.1 | 5.1 | 4.5 |
| QG05 | 0.8 | 0.8 | 1.5 | 0.77 | 0.81 | 1.45 | QG22 | 3.9 | 5.2 | 4.4 | 3.9 | 5.1 | 4.4 |
| QG06 | 0.8 | 20.2 | −5.1 | 0.77 | 20.0 | −2.45 | QG23 | 0 | 0 | 0.7 | 0 | 0.04 | 0.7 |
| QG07 | 0.8 | 20.1 | −5.1 | 0.77 | 20.0 | −1.85 | QG24 | 0 | 0 | 0.7 | 0 | 0.03 | 0.63 |
| QG08 | 0.8 | 0.8 | 1.4 | 0.77 | 0.8 | 1.4 | QG25 | 4.4 | 4.5 | 3.9 | 4.4 | 4.4 | 3.8 |
| QG10 | 0.1 | 0 | −0.7 | 0.05 | 0 | −0.64 | QG26 | −5.2 | −5.2 | −4.5 | −5.1 | −5.1 | −4.5 |
| QG11 | 5.1 | 5.1 | 4.5 | 5.1 | 5.1 | 4.5 | QH51 | 0.5 | 5.1 | 0.1 | 0.44 | 4.5 | 0 |
| QG12 | 0.8 | 20.3 | 0.4 | 0.71 | 20.5 | 0.35 | QH52 | 0.5 | 5.1 | 0.2 | 0.44 | 4.1 | 0 |
| QG13 | 0.8 | 20.3 | 0.2 | 0.71 | 20.5 | 0.13 | QH53 | 5.2 | −5.2 | 5.1 | 5.1 | −4.6 | 4.7 |
| QG14 | 0.5 | 10.8 | 0.3 | 0.53 | 11.0 | 0.24 | QH54 | 5.2 | 4.3 | 5.1 | 5.1 | 4.3 | 4.7 |
| QG15 | 0.5 | 10.8 | 0.5 | 0.53 | 11.0 | 0.48 | QH55 | 5.0 | 5.0 | 4.3 | 4.9 | 4.9 | 4.3 |
| QG16 | 0 | 20.9 | 0 | 0 | 21.0 | 0.01 | QH56 | 5.2 | −5.2 | 5.1 | 5.1 | −4.5 | 4.6 |
| QG17 | 0 | 5.1 | 0 | 0 | 4.9 | 0.01 | QH57 | 0 | 0 | 0.7 | 0 | 0.01 | 0.61 |

Voltage values are measured by the following meter without input signal at NR SW = OFF, recording mode.
E. Voltmeter = Electronic Voltmeter
C. Tester = Circuit Tester (20kΩ/V impedance)
( less than 10V — 10V range
10V or more — 50V range )

## Mecha. Control P.W.B.

| | E. Voltmeter | | | C. Tester (20kΩ/V) | | |
|---|---|---|---|---|---|---|
| | E | C | B | E | C | B |
| Q801 | 0.01 | 0.01 | 0.65 | 0.02 | 0.02 | 0.63 |
| Q802 | 0.01 | 0.65 | 0.14 | 0.02 | 0.65 | 0.13 |
| Q803 | 0.80 | 0.87 | 1.49 | 0.79 | 0.85 | 1.50 |
| Q804 | 0.02 | 0.08 | 0.80 | 0.03 | 0.09 | 0.79 |
| Q805 | 0.02 | 0.70 | 0.14 | 0.03 | 0.68 | 0.07 |
| Q807 | 0.03 | 0.05 | 0.68 | 0.03 | 0.06 | 0.67 |
| Q808 | 0.03 | 33.6 | 0.05 | 0.03 | 33.5 | 0.05 |
| Q809 | 33.7 | 14.2 | 33.7 | 33.5 | 14.5 | 33.5 |
| Q810 | 0.02 | 4.98 | 0.11 | 0.02 | 3.3 | 0.1 |
| Q811 | 0.02 | 0.11 | 0.74 | 0.03 | 0.12 | 0.73 |
| Q812 | 0.02 | 14.12 | 0.11 | 0.03 | 14.5 | 0.12 |
| Q813 | 0.02 | 0.10 | 0.72 | 0.03 | 0.11 | 0.71 |
| Q814 | 0.11 | 9.80 | 0.10 | 0.13 | 9.7 | 0.11 |
| Q815 | 6.8 | 9.80 | 7.48 | 6.8 | 9.7 | 7.4 |
| Q816 | 0 | 0.11 | 0.8 | 0.03 | 0.13 | 0.78 |
| Q817 | 0.02 | 6.82 | 0.1 | 0.03 | 6.8 | 0.1 |
| Q818 | 0.02 | 7.49 | 0.06 | 0.03 | 7.4 | 0.05 |
| Q821 | 0.01 | 2.0/0.03 | 0.02/0.67 | 0.03 | 1.87/0.04 | 0.03/0.67 |
| Q822 | 5.07 | 2.55 | 5.06 | 5.1 | 2.7 | 5.0 |
| Q823 | 5.07 | 5.05 | 4.41 | 5.1 | 5.1 | 4.4 |
| Q824 | 0.01 | 2.48 | 0.01 | 0.02 | 2.6 | 0.02 |
| Q825 | 9.8 | 11.2 | 10.4 | 9.7 | 11.5 | 11.0 |

## Power Supply P.W.B.

| | E. Voltmeter | | | C. Tester (20kΩ/V) | | |
|---|---|---|---|---|---|---|
| | E | C | B | E | C | B |
| Q824 | 0 | 0.62 | 0 | 0 | 0.6 | 0 |
| Q825 | 0 | 0.06 | 0.62 | 0 | 0.06 | 0.6 |
| Q826 | 5.1 | 0.18 | 5.1 | 5.1 | 0 | 5.0 |
| Q901 | 11.9 | 0 | 11.3 | 12.0 | 0 | 11.5 |
| Q902 | 21.2 | 23.9 | 21.8 | 21.0 | 24.0 | 22.0 |
| Q903 | 23.9 | 33.1 | 24.6 | 24.0 | 33.0 | 24.6 |
| Q904 | 5.09 | 14.6 | 5.77 | 5.1 | 14.9 | 5.75 |
| Q905 | 16.4 | 9.5 | 15.8 | 16.5 | 9.4 | 16.1 |
| Q906 | −16.2 | −9.7 | −15.5 | −16.2 | −10.0 | −15.5 |
| Q907 | 0 | 15.6 | 0.59 | 0 | 15.8 | 0.59 |
| Q908 | 0 | 0.59 | 0.59 | 0 | 0.59 | 0.59 |
| Q909 | 16.4 | 0.59 | 0.79 | 16.5 | 0.59 | 0.77 |
| Q910 | 0 | −15.0 | −0.6 | 0 | −15.0 | −0.6 |
| Q911 | 0 | −0.6 | −0.58 | 0 | −0.6 | −0.58 |
| Q912 | D<br>−0.6 | G<br>−16.2 | S<br>−16.0 | D<br>−0.59 | G<br>−16.2 | S<br>−16.0 |
| Q913 | −5.18 | −9.17 | −5.8 | −5.2 | −9.2 | −5.8 |

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IC801 | E. Voltmeter | 2.57 | 2.89 | 4.75 | 3.69 | 3.68 | 0.06 | 0.14 | 5.07 | 3.56 | 0.09 | 0.01 | 2.24 | 0.85 | 0.05 |
| | C. Tester | 2.5 | 2.9 | 4.9 | 3.7 | 3.6 | 0.07 | 0.15 | 5.0 | 3.5 | 0.1 | 0.02 | 2.25 | 0.83 | 0.05 |
| | | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | | | | | | |
| | E. Voltmeter | 2.48 | 2.48 | 0 | 4.7 | 0.01 | 2.0/0.03 | 2.56 | 5.08 | | | | | | |
| | C. Tester | 2.22 | 2.23 | 0 | 4.7 | 0.02 | 1.87/0.04 | 2.32 | 5.1 | | | | | | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| IC802 | E. Voltmeter | 3.67 | 3.67 | 0.16 | 0.16 | 0.23 | 4.5 | 0.01 | 4.5 | 0.23 | 0.11 | 0.11 | 3.69 | 3.69 | 5.08 |
| | C. Tester | 3.7 | 3.7 | 0.17 | 0.17 | 0.23 | 4.3 | 0.03 | 4.3 | 0.23 | 0.17 | 0.17 | 3.7 | 3.7 | 5.0 |
| IC803 | E. Voltmeter | 3.67 | 3.69 | 0.16 | 0.16 | 0.05 | 4.5 | 0.01 | 0.16 | 4.5 | 4.44 | 4.44 | 0.38 | 4.75 | 5.08 |
| | C. Tester | 3.7 | 3.7 | 0.17 | 0.17 | 0.07 | 4.3 | 0.03 | 0.17 | 4.3 | 4.4 | 4.4 | 0.37 | 4.8 | 5.1 |

## FL P.W.B.

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IC701 | E. Voltmeter | 0 | 2.46 | 23.2 | 10.2 | 10.7 | 0.11 | 0.11 | 0.12 | 0.12 | 0.13 | 0.12 | 0.12 | 0.14 | 0.13 |
| | C. Tester | 0 | 2.13 | 23.5 | 10.5 | 11.0 | 0.11 | 0.11 | 0.11 | 0.11 | 0 | 0.11 | 0.11 | 0.12 | 0.12 |
| | | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| | E. Voltmeter | 0.15 | 0.15 | 0.14 | 0.14 | 0.15 | 0.14 | 0.15 | 0.14 | 0.14 | 0.63 | 20.07 | 3.12 | 1.82 | 1.82 |
| | C. Tester | 0.13 | 0.13 | 0.12 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.63 | 20.0 | 3.1 | 0.31 | 0.31 |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| IC702 | E. Voltmeter | 1.76 | 1.86 | 1.84 | 0 | 1.83 | 1.86 | 2.17 | 23.25 | | | | | | |
| | C. Tester | 1.75 | 4.2 | 1.25 | 0 | 1.25 | 4.3 | 0 | 23.5 | | | | | | |
| IC703 | E. Voltmeter | 1.82 | 1.82 | 1.82 | 1.82 | 0.04 | 0.04 | 0 | 1.83 | 1.83 | 1.83 | 1.83 | 14.8 | 14.8 | 16.7 |
| | C. Tester | 0.31 | 0.31 | 0.31 | 0.76 | 0.05 | 0.05 | 0 | 0.76 | 0.32 | 0.32 | 0.31 | 15.0 | 15.0 | 17.0 |

| | E. Voltmeter | | | C. Tester (20kΩ/V) | | |
|---|---|---|---|---|---|---|
| | E | C | B | E | C | B |
| Q701 | 0 | 0/5.9 | −4/0.6 | 0 | 5.2/0.3 | −1.7/0.6 |
| Q702 | 0 | 5.9/0 | 0.6/−4 | 0 | 0.3/5.2 | 0.6/−1.7 |
| Q703 | 0 | 0.04 | 0.67 | 0 | 0 | 0.66 |

## Main Amp. P.W.B.

| | E. Voltmeter | | | C. Tester (20kΩ/V) | | |
|---|---|---|---|---|---|---|
| | E | C | B | E | C | B |
| Q01 | 0 | 23.4 | 0 | 0 | 22.5 | 0 |
| Q02 | 23.6 | 0.01 | 23.67 | 23.5 | 0 | 23.7 |
| Q03 | 0 | 12.5 | 0.28 | 0 | 12.8 | 0.24 |
| Q04 | 9.0 | 0 | 10.6 | 8.9 | 0 | 11.0 |
| Q05 | 0 | 0.08 | 0.77 | 0 | 0.09 | 0.76 |
| Q07 | 0.96 | 15.7 | 0.34 | 0.95 | 16.0 | 0.28 |
| Q08 | 0.96 | 15.7 | 0.49 | 0.95 | 16.0 | 0.43 |
| Q101, 201 | −0.55 | 2.52 | 0 | −0.55 | 1.75 | 0 |
| Q102, 202 | −0.55 | 2.51 | 0 | −0.55 | 1.80 | 0 |
| Q103, 203 | 1.97 | 9.0 | 2.52 | 1.95 | 9.0 | 1.75 |
| Q104, 204 | 1.97 | 8.38 | 2.51 | 1.9 | 8.3 | 1.77 |
| Q105, 205 | 9.01 | 0.22 | 8.38 | 9.0 | 0.13 | 8.3 |
| Q106, 206 | 0 | 0 | 0.63 | 0 | 0 | 0.63 |
| Q107, 207 | 0 | 0 | 0 | 0 | 0 | 0 |
| Q108, 208 | −0.5 | 8.38 | 0 | −0.5 | 8.3 | 0 |
| Q109, 209 | −0.5 | 9.01 | 0 | −0.51 | 9.0 | 0 |
| Q110, 210 | 9.01 | 0 | 8.38 | 9.0 | 0 | 8.3 |
| Q111, 211 | 0 | 0 | 0 | 0 | 0 | 0 |
| Q112, 212 | −2.15 | 3.90 | −1.5 | −2.2 | 3.9 | −0.11 |

| | E. Voltmeter | | | C. Tester (20kΩ/V) | | |
|---|---|---|---|---|---|---|
| | E | C | B | E | C | B |
| QA01 | −0.15 | −0.24 | 0 | −0.09 | −0.24 | 0 |
| QA02 | 1.05 | 1.13 | 1.69 | 1.05 | 1.15 | 1.15 |
| QA03 | 0 | 0 | 0.67 | 0 | 0 | 0.66 |
| QA04 | 0 | 0 | 0.62 | 0 | 0 | 0.6 |
| QA05 | 0 | 0.03 | 0.65 | 0 | 0.04 | 0.63 |
| QA06 | 0 | 0 | 0 | 0 | 0 | 0 |
| QA07 | −0.65 | 9.01 | −0.04 | −0.65 | 9.0 | −0.04 |
| QA08 | 0 | 0 | 0 | 0 | 0 | 0 |
| QA09 | 0 | 0 | 0 | 0 | 0 | 0 |
| QA10 | 0 | 0 | 0 | 0 | 0 | 0 |
| QA11 | 0 | 0 | 0.68 | 0 | 0 | 0.67 |
| QA12 | 0 | 0 | 0.62 | 0 | 0 | 0.61 |
| QA13 | 2.32 | 0 | 0.61 | 2.16 | 0 | 0.6 |
| QA14 | −0.03 | 0 | 0 | −0.01 | 0 | 0 |
| QA15 | 3.3 | 3.39 | 3.91 | 3.3 | 3.4 | 3.2 |
| QC01 | 9.01 | 0 | 8.99 | 9.0 | 0 | 8.1 |
| QC02 | 9.01 | 7.13 | 8.99 | 9.0 | 7.1 | 8.1 |
| QC03 | 7.86 | 7.8 | 7.19 | 7.8 | 7.7 | 7.1 |

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ICA01, B01 | E. Voltmeter | 0 | 0.03 | 0.15 | 0 | 0.02 | 0.03 | −0.24 | 0.02 | −9.18 | 0 | 0.1 | 0 | 0.03 | 5.44 | 5.29 | 9.01 |
| | C. Tester | 0 | 0.03 | 0 | 0 | 0 | 0.03 | −0.25 | 0 | −9.2 | 0 | 0.11 | 0 | 0 | 4.7 | 4.3 | 9.0 |
| ICA02, B02 | E. Voltmeter | 0 | −0.05 | −0.25 | 0 | 0 | −0.03 | 0.14 | 0 | −9.18 | 0 | 0.11 | 0 | 0 | 6.02 | 5.86 | 9.01 |
| | C. Tester | 0 | −0.05 | −0.25 | 0 | 0 | −0.03 | 0.14 | 0 | −9.2 | 0 | 0.11 | 0 | 0 | 5.2 | 4.7 | 9.0 |
| ICA03, B03 | E. Voltmeter | 0 | 0 | 0 | 0 | 0 | −0.03 | −0.07 | 0 | −9.17 | 0 | 0.08 | 0 | 0 | 6.02 | 5.86 | 9.01 |
| | C. Tester | 0 | 0 | 0 | 0 | 0 | −0.03 | −0.08 | 0 | −9.18 | 0 | 0 | 0 | 0 | 5.2 | 4.9 | 9.0 |
| ICA04, B04 | E. Voltmeter | 0 | −0.01 | −0.07 | 0 | 0 | −0.06 | 0 | 0.01 | −9.17 | 0 | 0.08 | 0 | 0.05 | 5.46 | 5.31 | 9.01 |
| | C. Tester | 0 | −0.02 | −0.08 | 0 | 0 | −0.06 | 0 | 0 | −9.2 | 0 | 0 | 0 | 0 | 4.8 | 4.4 | 9.0 |
| ICC01 | E. Voltmeter | −0.02 | 0 | 0 | −9.18 | 0 | 0 | −0.02 | 9.01 | | | | | | | | |
| | C. Tester | −0.03 | 0 | 0 | −9.18 | 0 | 0 | −0.02 | 9.0 | | | | | | | | |
| ICC02 | E. Voltmeter | 1.97 | 0 | 1.98 | 0 | 0 | 0.02 | 0 | 0 | 7.51 | | | | | | | |
| | C. Tester | 0.27 | 0 | 2.0 | 0 | 0 | 0.02 | 0 | 0 | 7.5 | | | | | | | |
| ICC03 | E. Voltmeter | 0 | 0 | 0 | −9.18 | 0 | 0 | 0 | 9.01 | | | | | | | | |
| | C. Tester | 0 | 0 | 0 | −9.18 | 0 | 0 | 0 | 9.0 | | | | | | | | |

## Display P.W.B.

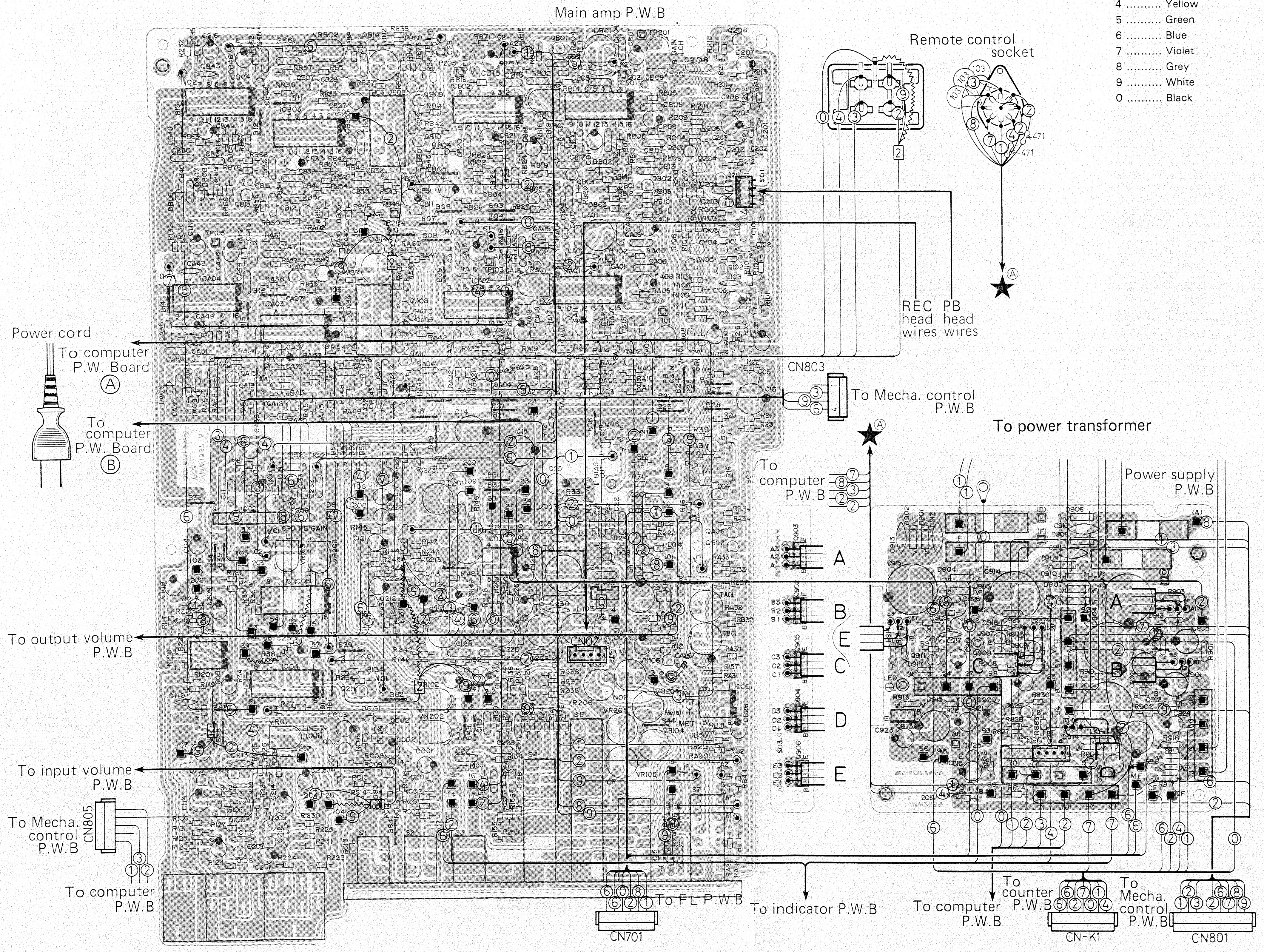
| | E. Voltmeter | | | C. Tester (20kΩ/V) | | |
|---|---|---|---|---|---|---|
| | E | C | B | E | C | B |
| QK01 | 0 | 5.04 | 0 | 0 | 4.6 | 0 |
| QK02 | 0 | 0/20.9 | 0.62/0 | 0 | 2.0/15 | 0.45/0.2 |
| QK03 | 0 | 0 | 0.67 | 0 | 0 | 0.66 |
| QK04 | 0 | 20.9 | 0.14 | 0 | 20.5 | 0.1 |
| QK05 | 0 | 20.9 | 0.06 | 0 | 20.5 | 0.05 |
| QK06 | 0 | 2.87 | 0 | 0 | 2.9 | 0 |
| QK07 | 11.7 | 11.7 | 12.4 | 12.0 | 12.0 | 12.8 |

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ICK01 | E. Voltmeter | 20.0 | 11.8 | 11.8 | 0 | 0 | −5.17 | −5.17 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.1 |
| | C. Tester | 20.0 | 12.0 | 12.0 | 0 | 0 | −4.5 | −4.6 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 |
| | | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| | E. Voltmeter | 21.1 | 1.12 | 1.11 | 1.12 | 1.11 | 0.01 | 21.0 | 21.0 | 21.0/8.6 | 11.8 | 21.0 | 11.8 | 11.8 | 17.7 |
| | C. Tester | 21.0 | 1.30 | 1.20 | 1.25 | 1.2 | 0.02 | 21.0 | 21.0 | 18.0/9.0 | 12.0 | 21.0 | 12.0 | 12.0 | 14.5 |

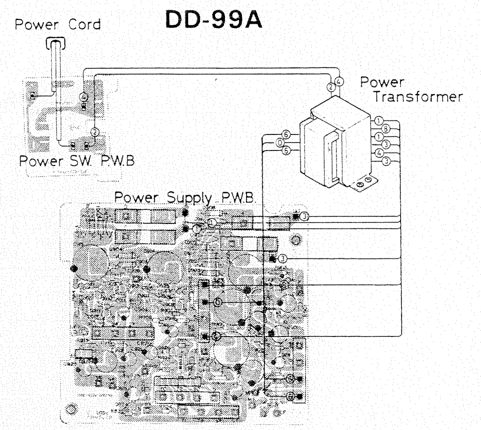
# Wiring Connection (1) Main amplifier circuit

**Color code are shown below**

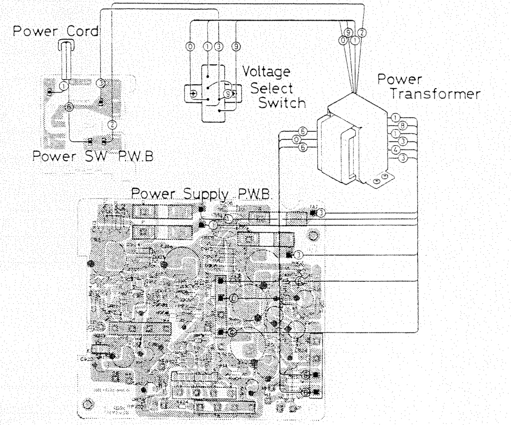
| | |
|---|---|
| 1 | Brown |
| 2 | Red |
| 3 | Orange |
| 4 | Yellow |
| 5 | Green |
| 6 | Blue |
| 7 | Violet |
| 8 | Grey |
| 9 | White |
| 0 | Black |


Main amp P.W.B
Remote control socket
REC head wires
PB head wires
CN803
To Mecha. control P.W.B
To power transformer
Power supply P.W.B
To computer P.W.B
A
B
E
C
D
E
Power cord
To computer P.W. Board Ⓐ
To computer P.W. Board Ⓑ
To output volume P.W.B
To input volume P.W.B
To Mecha. control P.W.B
CN805
To computer P.W.B
To FL P.W.B
CN701
To indicator P.W.B
To computer P.W.B
To counter P.W.B
CN-K1
To Mecha. control P.W.B
CN801

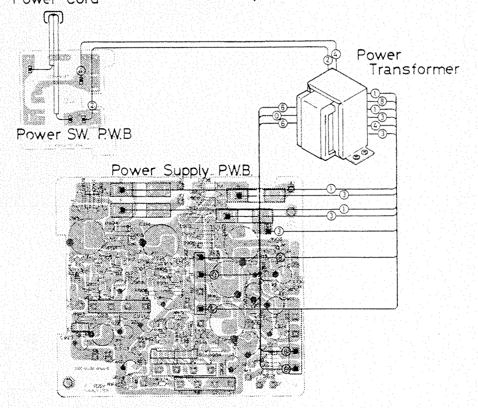
## DD-99A


Power Cord
Power Transformer
Power SW. P.W.B
Power Supply P.W.B

## DD-99B/E


Power Cord
Voltage Select Switch
Power Transformer
Power SW. P.W.B
Power Supply P.W.B

## DD-99C/J


Power Cord
Power Transformer
Power SW. P.W.B
Power Supply P.W.B

## DD-99U

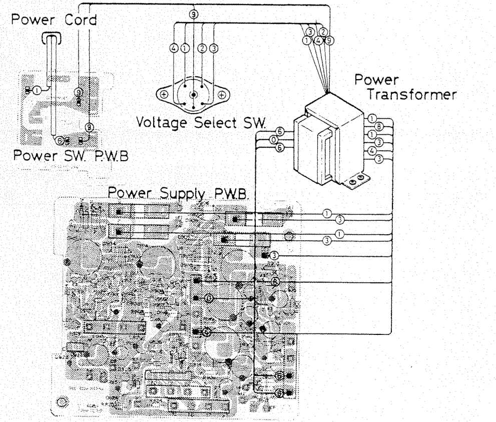
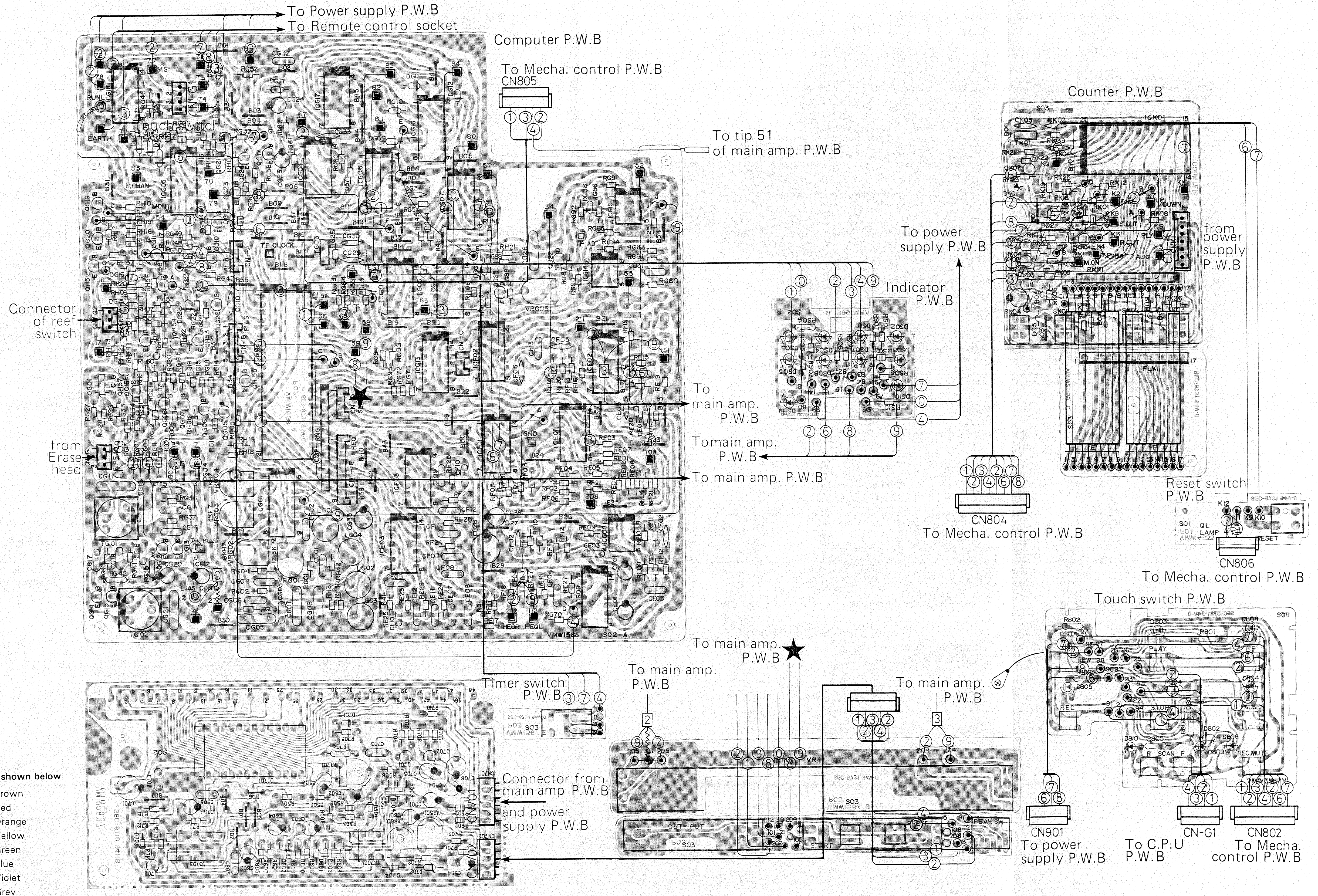

Power Cord
Voltage Select SW.
Power Transformer
Power SW. P.W.B
Power Supply P.W.B

Fig. 20

# Wiring Connection (2) Computer circuit

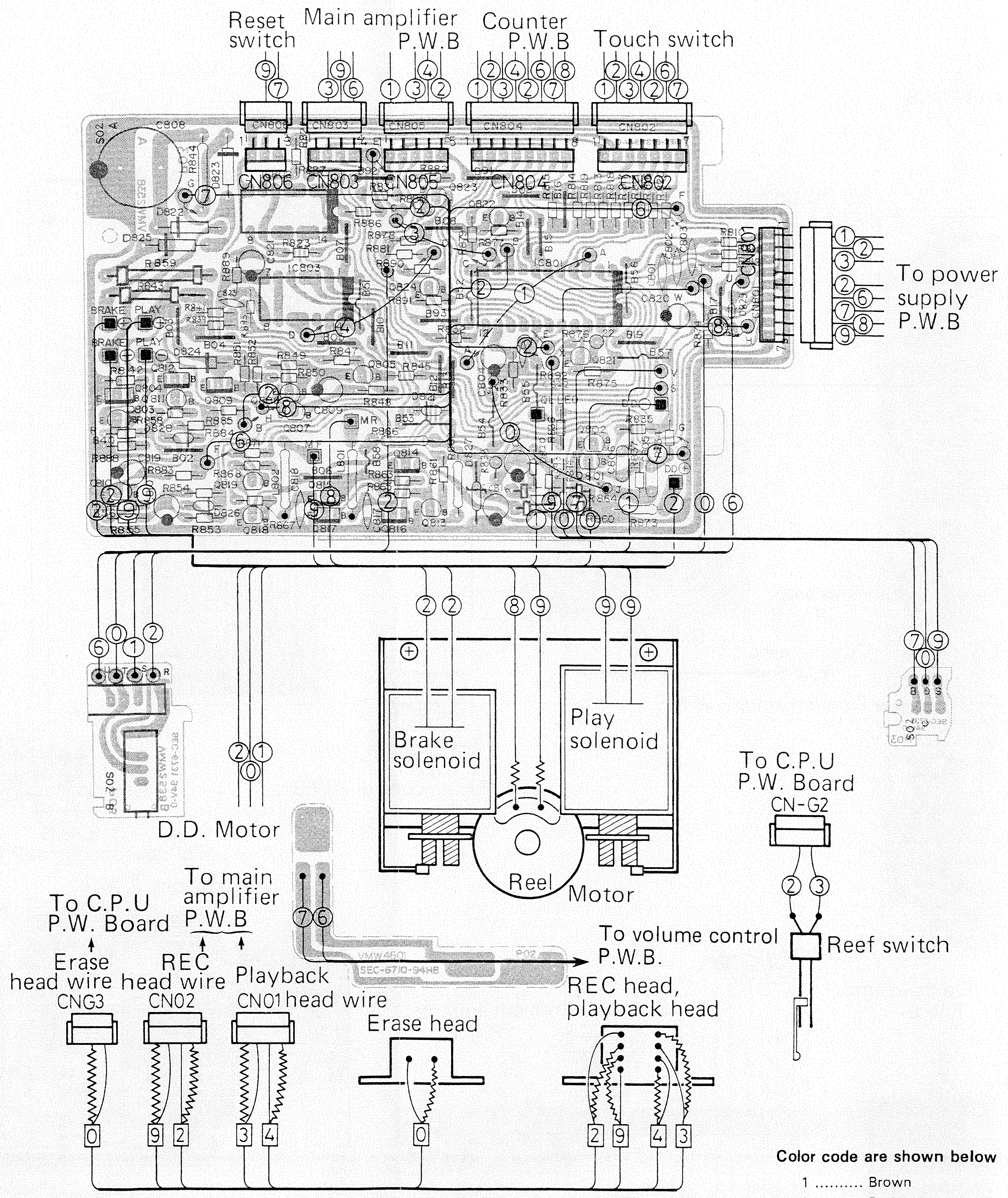

To Power supply P.W.B
To Remote control socket
Computer P.W.B
To Mecha. control P.W.B
CN805
To tip 51
of main amp. P.W.B
Counter P.W.B
To power
supply P.W.B
from
power
supply
P.W.B
Indicator
P.W.B
Connector
of reef
switch
from
Erase
head
To
main amp.
P.W.B
Tomain amp.
P.W.B
To main amp. P.W.B
CN804
To Mecha. control P.W.B
Reset switch
P.W.B
CN806
To Mecha. control P.W.B
Touch switch P.W.B
To main amp.
P.W.B
To main amp.
P.W.B
Timer switch
P.W.B
To main amp.
P.W.B
Connector from
main amp P.W.B
and power
supply P.W.B
CN901
To power
supply P.W.B
CN-G1
To C.P.U
P.W.B
CN802
To Mecha.
control P.W.B
TP CLOCK
EARTH
PLAY
REC
STOP
PAUSE
REC.MUTE
R SCAN F
OUT PUT
START
PEAK SW
VR
VMW1568

**Color code are shown below**

| | |
|---|---|
| 1 .......... | Brown |
| 2 .......... | Red |
| 3 .......... | Orange |
| 4 .......... | Yellow |
| 5 .......... | Green |
| 6 .......... | Blue |
| 7 .......... | Violet |
| 8 .......... | Grey |
| 9 .......... | White |
| 0 .......... | Black |

Fig. 21

# Wiring Connection (3) Mecha. control circuit


Reset switch
Main amplifier P.W.B
Counter P.W.B
Touch switch
CN806
CN803
CN805
CN804
CN802
CN801
To power supply P.W.B
D.D. Motor
Brake solenoid
Play solenoid
Reel
Motor
To C.P.U P.W. Board
CN-G2
Reef switch
To main amplifier P.W.B
To C.P.U P.W. Board
To volume control P.W.B.
Erase head wire
CNG3
REC head wire
CN02
Playback head wire
CN01
Erase head
REC head, playback head

Color code are shown below

1 .......... Brown
2 .......... Red
3 .......... Orange
4 .......... Yellow
5 .......... Green
6 .......... Blue
7 .......... Violet
8 .......... Grey
9 .......... White
0 .......... Black

Fig. 22

## Enclosure Assembly and Electrical Parts List (Except P.W. Board Parts)

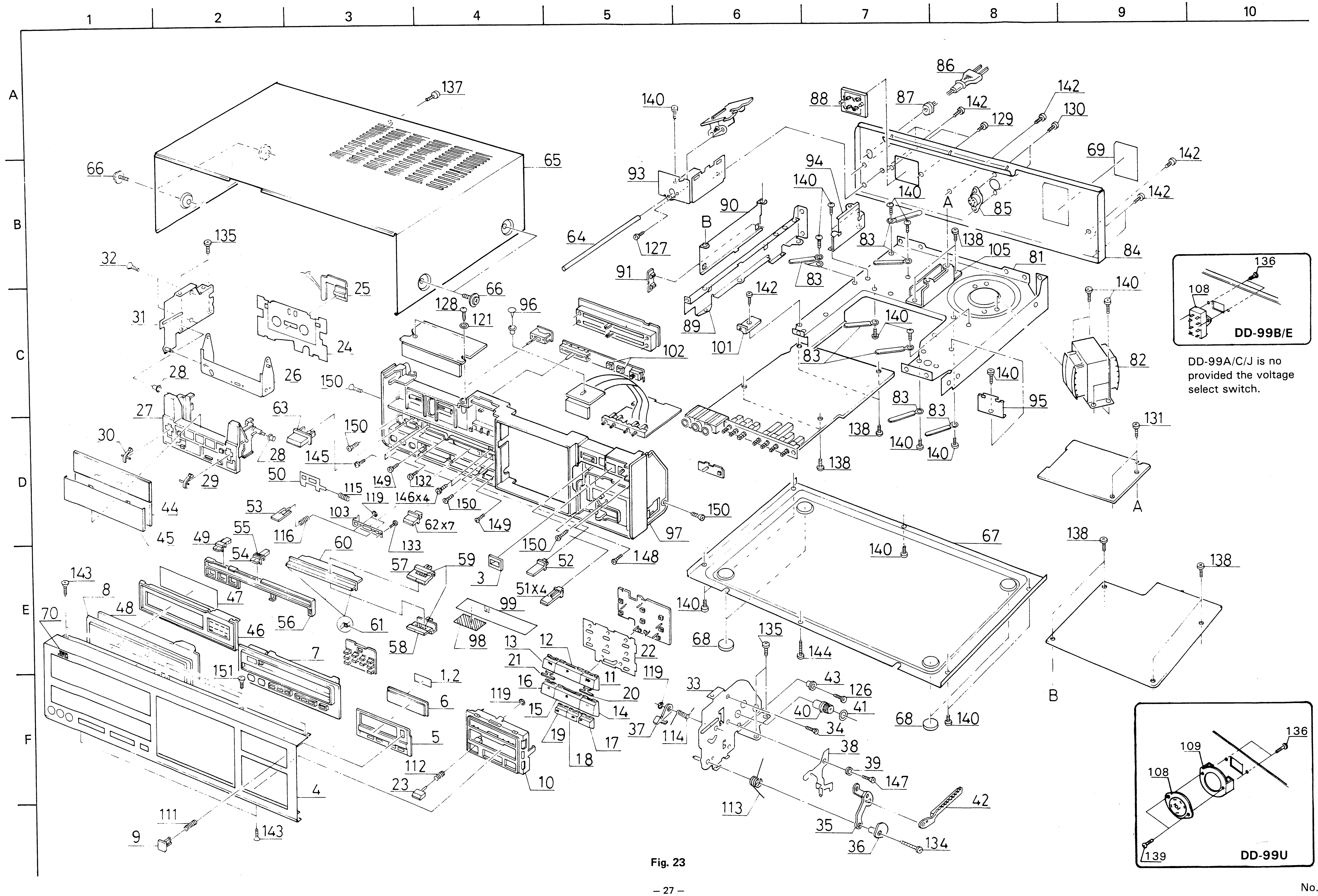
⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|---|
| 1 | | VJK4131-005 | Filter | Counter | 1 |
| 2 | | | Double Face | 〃 | 1 |
| 3 | | VJD4538-001 | LED. Reflector | | 1 |
| (1,4~8 10,70) | | ZCDD99Y-CBF | Front Plate Sub Ass'y | | 1 |
| 4 | | VJC1200-004 | Front Plate | | 1 |
| 5 | | VJD3319-001 | Counter Escutcheon | | 1 |
| 6 | | VJK4157-002 | Counter Lens | | 1 |
| 7 | | VJD3317-002 | Escutcheon | | 1 |
| 8 | | VJK3187-002 | Finder | | 1 |
| 9 | | VXP4180-00B | Push Button Ass'y | Reset | 1 |
| 10 | | VJD2181-002 | Button Case | | 1 |
| 11 | | VXP3079-001 | Push Button | FF | 1 |
| 12 | | 〃 -002 | 〃 | PLAY | 1 |
| 13 | | 〃 -003 | 〃 | REW | 1 |
| 14 | | 〃 -004 | 〃 | PAUSE | 1 |
| 15 | | 〃 -005 | 〃 | STOP | 1 |
| 16 | | 〃 -006 | 〃 | REC | 1 |
| 17 | | 〃 -007 | 〃 | REC MUTE | 1 |
| 18 | | 〃 -008 | 〃 | FF SCAN | 1 |
| 19 | | 〃 -009 | 〃 | REW SCAN | 1 |
| 20 | | VJD4533-001 | Marker | Green | 1 |
| 21 | | 〃 -002 | 〃 | Red | 1 |
| 22 | | VKL5099-001 | Button Bracket | | 1 |
| 23 | | VXP4177-00A | Push Button Ass'y | Eject | 1 |
| 24 | | VJD3314-001 | Mecha. Plate | | 1 |
| 25 | ⚠ | LD-702 | L.E.D. | | 1 |
| 26 | | VKL3332-00A | Holder Bracket Ass'y | | 1 |
| 27 | | VJT2065-001 | Cassette Holder | | 1 |
| 28 | | VKS4380-001 | Collar | | 2 |
| 29 | | VKS4379-001 | Pressure Lever | | 1 |
| 30 | | 〃 -002 | 〃 | | 1 |
| 31 | | VKL3338-00A | Mecha. Bracket Ass'y (L) | Left | 1 |
| 32 | | VKZ4143-002 | Special Screw | for Mecha. BKT ~Mecha. Chassis | 2 |
| 33 | | VKL3340-00A | Mecha. Bracket Ass'y (R) | Right | 1 |
| 34 | | VKZ4143-002 | Special Screw | Mecha. BKT | 2 |
| 35 | | VKS4376-002 | Eject Arm | | 1 |
| 36 | | VKS4377-001 | Arm Holder | | 1 |
| 37 | | VKS4378-001 | Lock Arm | | 1 |
| 38 | | VKL5100-001 | Eject Lever | | 1 |
| 39 | | VKH3013-004 | Flange Collar | | 1 |
| 40 | | VYH4460-001 | Gear | | 1 |
| 41 | | VYSS2R5-011 | Spacer | | 1 |
| 42 | | VKS4381-001 | Rack Plate | | 1 |
| 43 | | VKH3001-051 | Flange Collar | | 1 |
| (44,45) | | ZCDD99Y-CCA | Cassette Lid Ass'y | | 1 |
| 44 | | VJT3077-001 | Cassette Lid | | 1 |
| 45 | | VJT4050-008 | Lid Plate | | 1 |
| 46 | | VJD3321-001 | Meter Escutcheon | | 1 |
| 47 | | VJK4131-001 | Filter | | 1 |
| 48 | | VJK3188-007 | Indicator Lens | | 1 |
| 49 | | VXS3008-002 | Slide Knob | for Timer | |
| 50 | | VKL5113-001 | Lock Plate | 〃 | 1 |
| 51 | | VXP4181-002 | Push Button | Counter | 4 |
| 52 | | VXP4182-001 | 〃 | Meter | 1 |
| 53 | | VXP4183-00A | 〃 | BEST | 2 |
| 54 | | VXS3007-001 | Slide Knob | for Output | 1 |
| 55 | | VYSS1R3-001 | Spacer | 〃 | 1 |
| 56 | | VJD3320-001 | Escutcheon | 〃 | 1 |

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|---|
| 57 | | VXS3005-002 | Slide Knob (L) | for Input | 1 |
| 58 | | VXS3006-002 | 〃 (R) | 〃 | 1 |
| 59 | | VYTS407-003 | Spacer | | 2 |
| 60 | | VJD3312-001 | Slider | | 1 |
| 61 | | VYSF201-020 | Spacer | | 2 |
| 62 | | VXP4173-001 | Push Button | Select SW | 7 |
| 63 | | VXP4175-001 | Push Button | Power | 1 |
| 64 | | VKS4003-009 | Pipe | | 1 |
| 65 | | VJC1202-002 | Top Cover | | 1 |
| 66 | | VKZ3001-002 | Special Screw | | 4 |
| 67 | | VKL1207-001 | Bottom Cover | | 1 |
| 68 | | VJF4003-002 | Foot | | 4 |
| 69 | | VYN2094-002PA | Name Plate | DD-99B | 1 |
| | | 〃 -003PA | 〃 | DD-99A | 1 |
| | | 〃 -004PA | 〃 | DD-99C | 1 |
| | | 〃 -005PA | 〃 | DD-99E | 1 |
| | | 〃 -006PA | 〃 | DD-99J | 1 |
| | | 〃 -007PA | 〃 | DD-99U | 1 |
| 70 | | VJD4580-001 | JVC Mark | | 1 |
| 81 | | VKL1206-001 | Amp Chassis (R) | | 1 |
| 82 | ⚠ | VTP66C8-011KBS | Power Transformer | DD-99B | 1 |
| | ⚠ | VTP66T8-011K | 〃 | DD-99A | 1 |
| | ⚠ | VTP66A8-021K | 〃 | DD-99C/J | 1 |
| | ⚠ | VTP66C8-011K | 〃 | DD-99E | 1 |
| | ⚠ | VTP66U8-011K | 〃 | DD-99U | 1 |
| 83 | | VKZ4001-011 | Wire Holder | | 8 |
| 84 | | VJC2060-003 | Rear Panel | DD-99B/E/U | 1 |
| | | 〃 -004 | 〃 | DD-99A/C/J | 1 |
| 85 | | QMC0888-008 | DIN Socket | for Remote | 1 |
| 86 | ⚠ | QMP9017-008BS | Power Cord | DD-99B | 1 |
| | ⚠ | QMP2560-200 | 〃 | DD-99A | 1 |
| | ⚠ | QMP1200-200 | 〃 | DD-99C/J | 1 |
| | ⚠ | QMP3900-200 | 〃 | DD-99E | 1 |
| | ⚠ | QMP7600-200 | 〃 | DD-99U | 1 |
| 87 | ⚠ | QHS3876-162 | Strain Relief | DD-99A/C/E/J/U | 1 |
| | ⚠ | 〃 -162BS | 〃 | DD-99B | 1 |
| 88 | | VMJ3003-001 | Pin Jack Ass'y | for LINE | 1 |
| 89 | | VKL3337-001 | Amp. Chassis (L) | | 1 |
| 90 | | VKL5109-001 | Bracket | for BES | 1 |
| 91 | | VKS3000-001 | P.W.B. Support | | 2 |
| 93 | | VKL3329-001 | Power Bracket | | 1 |
| 94 | | VKL5110-001 | Bracket | for P.S. P.W.B. | 1 |
| 95 | | VKL5111-001 | 〃 | for Counter | 1 |
| 96 | | E48729-002 | Plastic Rivet | | 1 |
| 97 | | VJC1201-001 | Front Panel | | 1 |
| 98 | | VYTS407-004 | Spacer | | 1 |
| 99 | | VKL5177-001 | Shield Plate | | 1 |
| 100 | | QSP0410-001 | Push Switch | for Meter | 1 |
| 101 | | VKS4395-001 | Guide | | 1 |
| 102 | | QSP0301-001 | Tact Switch | | 2 |
| 103 | | VKL5112-001 | Bracket | | 1 |
| 105 | | VKL5005-002 | Heat Sink | | 1 |
| 108 | ⚠ | QSS2325-011BS | Voltage Selector | DD-99B | 1 |
| | ⚠ | 〃 -011 | 〃 | DD-99E | 1 |
| | ⚠ | QSR0084-001 | 〃 | DD-99U | 1 |
| 109 | | VKL4275-001 | Bracket | DD-99U | 1 |
| 111 | | VKW3001-075 | Compression Spring | Reset | 1 |
| 112 | | 〃 -076 | 〃 | Eject | 1 |
| 113 | | VKW3006-044 | Torsion Spring | Eject Arm | 1 |
| 114 | | 〃 -037 | 〃 | Lock Arm | 1 |
| 115 | | VKW3001-077 | Compression Spring | Lock Plate | 1 |
| 116 | | 〃 -078 | 〃 | Bracket | 2 |

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|---|
| 119 | | REE2500 | E Ring | Push Button Ass'y<br>x 1, Lock Arm x 1 | 2 |
| 121 | | Q03091-105 | Washer | Counter BKT | 2 |
| 122 | | Q03093-501 | 〃 | Counter BKT | 1 |
| 126 | | LPSP2606Z | Screw | Flange Collar | 1 |
| 127 | | LPSP3006Z | 〃 | Power Switch | 2 |
| 128 | | SBSF3008V | 〃 | Plastic Rivet | 2 |
| 129 | | SDSB3008R | 〃 | Pin Jack Ass'y | 2 |
| 130 | | SDSP2605R | 〃 | DIN Socket | 2 |
| 131 | | DPSP3008V | 〃 | Power P.W.B. | 2 |
| 132 | | SDST2004Z | 〃 | Push Switch Meter | 2 |
| 133 | | SDSP2008Z | 〃 | Tact Switch | 1 |
| 134 | | SDST2614Z | 〃 | Eject Arm | 1 |
| 135 | | SDST3006C | 〃 | Mecha. ~ A. Chassis | 4 |
| 136 | | SDSP3006R | 〃 | V. Select DD-99B/E/U | 2 |
| 137 | | SDST3006R | 〃 | Top Cover | 1 |
| 138 | | SDST3006V | 〃 | P.W.B. x 4<br>Heat Sink x 2<br>Touch Key Board P.W.B. x 4 | 10 |
| 139 | | LPSP3006Z | 〃 | Voltage Select DD-99U | 2 |
| 140 | | SDST3006Z | 〃 | Bottom Cover x 5<br>Power Trans. x 4<br>Wire Holder x 8<br>Bracket x 2<br>Counter Bracket x 1 | |
| 142 | | SDST3008R | 〃 | Amp. Chassis (R) x 4<br>Amp. Chassis (L) x 2<br>Power Bracket x 1 | 7 |
| 143 | | SSSF3008Z | 〃 | F. Panel ~ F. Plate | 5 |
| 144 | | SSSF3010Z | 〃 | Bottom Cover | 1 |
| 145 | | SSSP2605Z | 〃 | Timer Switch | 2 |
| 146 | | SSSP2606Z | 〃 | Input V. Resistor | 4 |
| 147 | | SSSP2608Z | 〃 | Eject Lever | 1 |
| 148 | | SSSP3006V | 〃 | Plastic Rivet | 2 |
| 149 | | SSSP3006V | 〃 | Push Switch | 2 |
| 150 | | SSST3008Z | 〃 | F. Panel | 6 |
| 151 | | SSST3006C | 〃 | Mecha. ~ F. Plate | 2 |

# Enclosure Assembly and Electrical Parts (Except P.W. Board Parts)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85
69
142
142
84
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138
140
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138
140
95
82
140
140
131
A
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138
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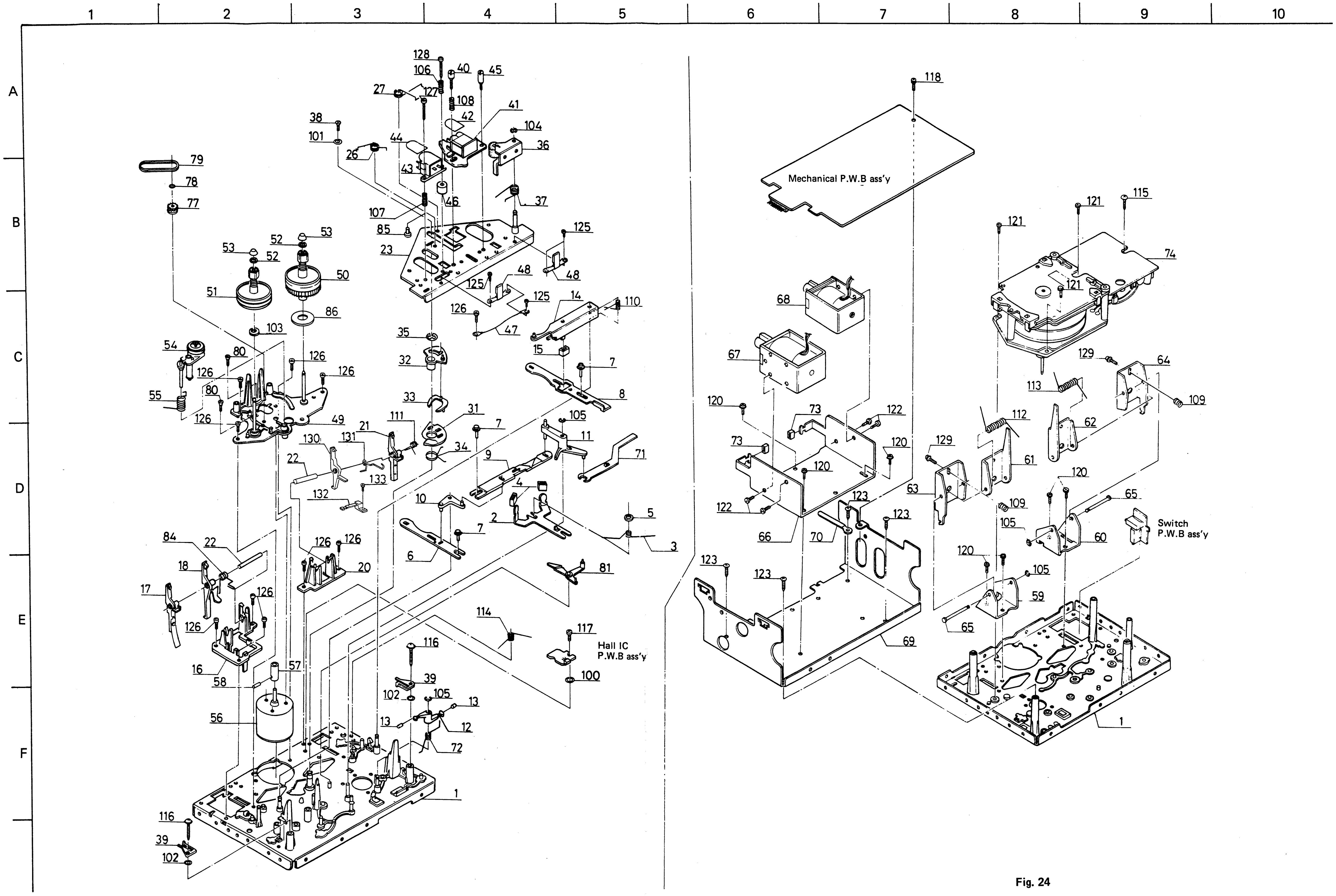
136
108
DD-99B/E
136
109
108
139
DD-99U

DD-99A/C/J is no provided the voltage select switch.

Fig. 23

# Mechanical Component Parts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125
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32
33
31
111
21
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105
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2
5
6
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81
114
117
Hall IC
P.W.B ass'y
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102
118
Mechanical P.W.B ass'y
68
67
120
73
122
73
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123
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123
69
115
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121
74
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129
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113
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129
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63
120
65
109
105
60
Switch
P.W.B ass'y
120
105
59
65
1

Fig. 24

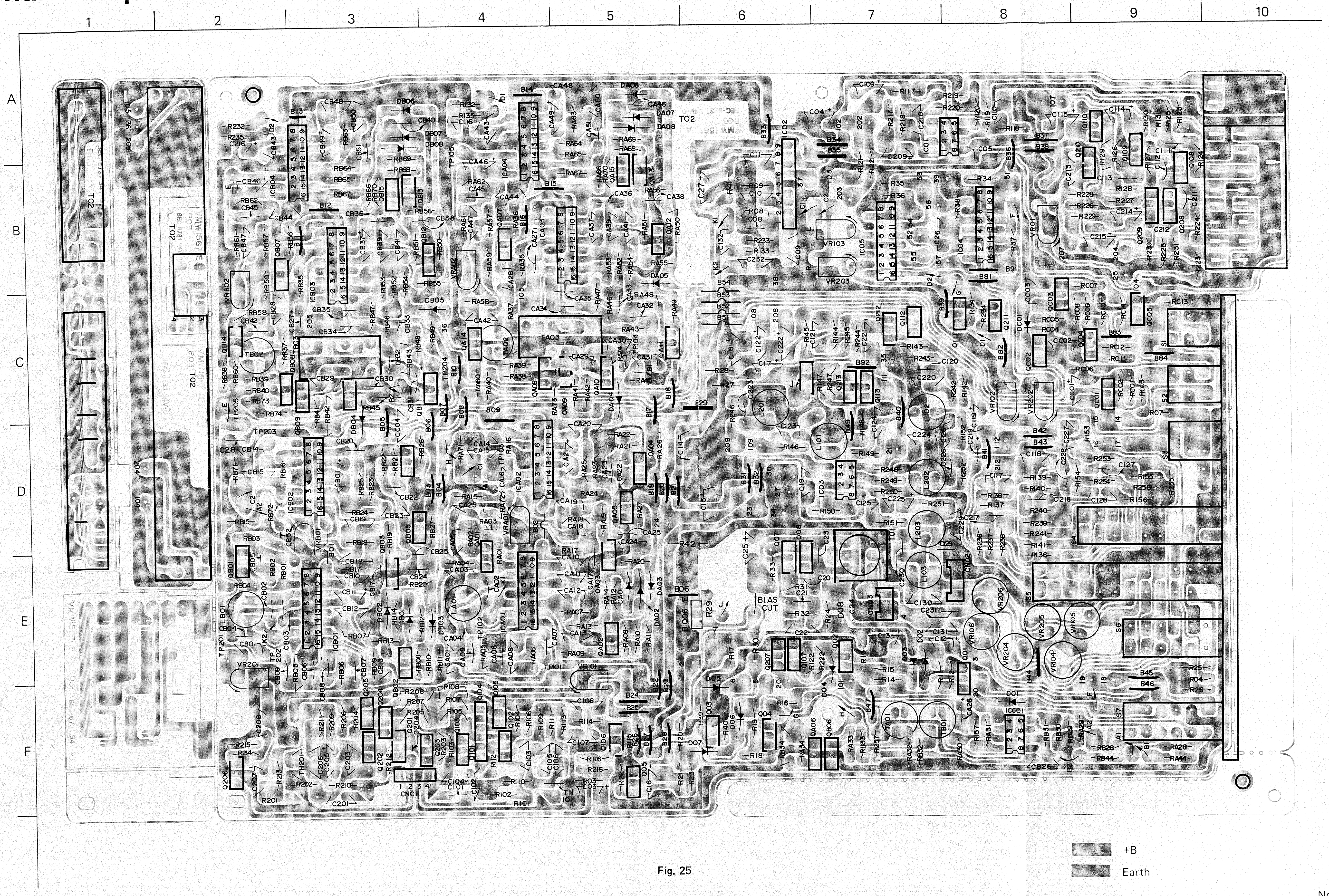
⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

## Mechanical Component Parts List

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|---|
| 1 | | VKL1184-00D | Chassis Base Ass'y | | 1 |
| 2 | | VKL5160-001 | Brake Bar | | 1 |
| 3 | | VKW4243-001 | Brake Bar Spring | | 1 |
| 4 | | VKZ4129-001 | Rubber Tire | | 2 |
| 5 | | VKS4398-001 | Stopper | | 1 |
| 6 | | VKL4824-001 | Lock Plate (1) | | 1 |
| 7 | | VKS4348-001 | Lock Bush | | 3 |
| 8 | | VKL5114-001 | Slide Plate | | 1 |
| 9 | | VKS4383-001 | Lock Plate (2) | | 1 |
| 10 | | VKS4258-00C | Connecting Lever Ass'y | | 1 |
| 11 | | VKS4260-00D | Lock Lever Ass'y | | 1 |
| 12 | | VKS4384-001 | Pause Lever | | 1 |
| 13 | | VKZ3003-003 | Tube | | 2 |
| 14 | | VKL5102-00B | Play Arm Ass'y | | 1 |
| 15 | | VKZ4129-001 | Rubber Tire | | 1 |
| 16 | | VKS2113-001 | Switch Holder (L) | | 1 |
| 17 | | VKS4394-00C | Pressure Lever Ass'y | | 1 |
| 18 | | VKS4385-002 | Switch Lever | | 1 |
| 20 | | VKS3144-001 | Switch Holder (R) | | 1 |
| 21 | | VKS4386-002 | Pressure Lever | | 1 |
| 22 | | VKH4196-001 | Shaft | | 2 |
| 23 | | VKL5197-00B | Slide Base Ass'y | | 1 |
| 26 | | VKW4339-001 | Lock Lever Spring | | 1 |
| 27 | | VKW4315-001 | ″ | | 1 |
| 31 | | VKS4387-001 | Scan Cam | | 1 |
| 32 | | VKS4388-001 | Gum Guide | | 1 |
| 33 | | VKS4454-002 | Trigger Pin | | 1 |
| 34 | | VKW4316-001 | Spring | | 1 |
| 35 | | REE4000 | E Ring | for Scan Cam | 1 |
| 36 | | VKP4113-00A | Pinch Roller Arm Ass'y | | 1 |
| 37 | | VKW4240-001 | Pinch Roller Spring | | 1 |
| 38 | | VKZ4128-001 | Special Screw | for Slide Base | 1 |
| 39 | | VKS4390-001 | Push Plate | | 2 |
| 40 | | VKH4238-001 | Azimuth Screw | | 1 |
| 41 | | VGH0425-302 | R/P Head Ass'y | | 1 |
| 42 | | VND4020-001 | Head Plate | R/P Head | 1 |
| 43 | | ZMM090424-0A | E. Head Ass'y | | 1 |
| 44 | | THC037417-02 | Head Plate | E. Head | |
| 45 | | VKH4239-001 | R/P Head Screw | | 1 |
| 46 | | VKH4215-001 | Head Collar | | 1 |
| 47 | | VMZ0008-00A | Wire Ass'y | | 2 |
| 48 | | VKY4212-001 | Wire Holder | | 2 |
| 49 | | VKL3343-00B | Reel Disk Bracket Ass'y | | 1 |
| 50 | | VKR4263-00A | Take Up Reel Ass'y | | 1 |
| 51 | | VKR4306-00A | Supply Reel Ass'y | | 1 |
| 52 | | VKR4170-001 | Ring | | 2 |
| 53 | | VKS4131-001 | Reel Stopper | | 2 |
| 54 | | VKR4280-00A | Idler Ass'y Unit | | 1 |
| 55 | | VKW4318-001 | Idler Spring | | 1 |
| 56 | | MDN-7V1-3 | Reel Motor | | 1 |
| 57 | | VKR4121-002 | Motor Pulley | | 1 |
| 58 | | YRS2603B | Screw | for M. Pulley | 1 |
| 59 | | VKL5178-001 | Shaft Holder | | 1 |
| 60 | | ″ -002 | ″ | | 1 |
| 61 | | VKL5107-001 | Solenoid Lever (1) | | 1 |
| 62 | | ″ -002 | ″ (1) | | 1 |
| 63 | | VKL5108-001 | ″ (2) | | 1 |
| 64 | | ″ -002 | ″ (2) | | 1 |
| 65 | | VKH4292-001 | Shaft | | 2 |
| 66 | | VKL3336-002 | Solenoid Bracket | | 1 |

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|---|
| 67 | ⚠ | VGP0301-005 | D.C. Solenoid Ass'y | for Play | 1 |
| 68 | | VGP0201-008 | ″ | for Lock | 1 |
| 69 | | VKL3254-002 | Holder Bracket | | 1 |
| 70 | | VKZ4001-010 | Wire Holder | | 2 |
| 71 | | VKL4912-002 | Lock Bar | | 1 |
| 72 | | VKW4332-002 | Lock Bar Spring | | 1 |
| 73 | | VKZ4129-001 | Rubber Tire | | 2 |
| 74 | | MC951DAS | DD Motor Ass'y | | 1 |
| 77 | | VKR4261-001 | Gear Pulley | | |
| 78 | | VKZ4004-001 | Special Washer | | 1 |
| 79 | | VKB3000-047 | Belt | | 1 |
| 80 | | VKZ4128-001 | Special Screw | for Motor | 3 |
| 81 | | VKS4453-001 | Select Lever | | 1 |
| 84 | | VKW4344-002 | Switch Spring | | 1 |
| 85 | | VKH3001-048 | Flange Collar | | 1 |
| 86 | | VKZ4003-004 | Clutch Felt | | 1 |
| 100 | | Q03091-138 | Washer | for Hall IC P.W.B. | 1 |
| 101 | | WSS2600N | ″ | for Slide Base | 1 |
| 102 | | WNS2600N | ″ | for Push Plate | 2 |
| 103 | | Q03093-838 | ″ | for Supply Reel Ass'y | 1 |
| 104 | | REE2000 | E. Ring | for Pinch Roller Ass'y | 1 |
| 105 | | REE2500 | ″ | for Connecting Lever x 1<br>Pause Lever x 1<br>Solenoid Lever x 2 | 4 |
| 106 | | VKW3001-080 | Compression Spring | Wire Holder | 1 |
| 107 | | ″ -081 | ″ | for E. Head | 1 |
| 108 | | ″ -047 | ″ | for Azimuth Screw | 1 |
| 109 | | ″ -086 | ″ | for Solenoid Lever | 2 |
| 110 | | VKW3006-019 | Torsion Spring | for Play Arm | 1 |
| 111 | | ″ -020 | ″ | for Pressure Lever | 1 |
| 112 | | ″ -038 | ″ | for Solenoid Lever | 1 |
| 113 | | ″ -039 | ″ | ″ | 1 |
| 114 | | ″ -042 | ″ | for Select Lever | 1 |
| 115 | | GPSA2608Z | Tap. Screw | for DD Motor | 1 |
| 116 | | GPSA2614Z | ″ | for Slide Base | 2 |
| 117 | | SPSP2605Z | Screw | for Hall IC P.W.B. | 1 |
| 120 | | LPSP2604Z | ″ | for Shaft Holder x 4<br>Solenoid BKT x 3 | 7 |
| 121 | | LPSP2606Z | ″ | for DD Motorx 3<br>Select Lever x 1 | 4 |
| 122 | | LPSP3004Z | ″ | for Solenoid | 4 |
| 123 | | SBSB2608Z | Tap. Screw | for Holder Bracket | 4 |
| 125 | | SPSP2004Z | Screw | for Wire Holder | 4 |
| 126 | | SPSP2606Z | ″ | for Switch Holder (L), (R) x 5<br>Wire Ass'y x 1<br>Reel Ass'y Unit x 4<br>P.W.B. x 2<br>Switch Spring (R) x 1 | 13 |
| 127 | | SPSX2010N | ″ | for E. Head | 2 |
| 129 | | SWSP2608Z | ″ | for Solenoid Lever | 2 |
| 130 | | VKS4397-003 | Switch Lever (2) | | 1 |
| 131 | | VKS4358-001 | Switch Spring | | 1 |
| 132 | | VSH1118-001 | Leaf Switch | | 1 |
| 133 | | SPSP2605Z | Screw | | 1 |

# Main Amp. P.W.B. Parts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VMW1567 D
VMW1567 E
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BIAS CUT
TP201
TP202
TP203
TP204
TP205
VR201
VR202
VR203
VR204
VR205
VR206
VR101
VR102
VR103
VR104
VR105
VR106
CN01
CN02
CN103

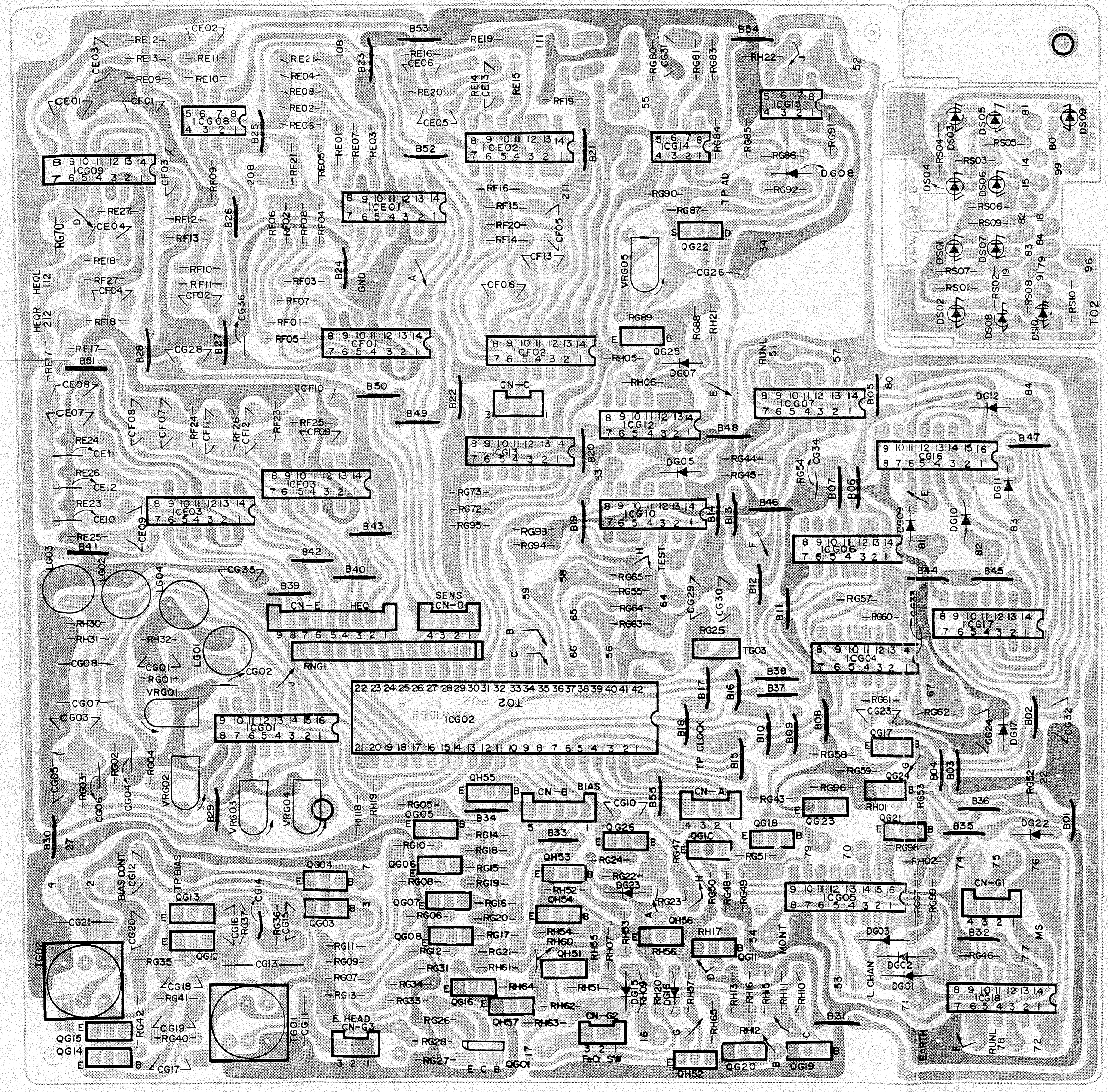
▨ +B

▨ Earth

Fig. 25

# Computer P.W.B. Parts

**Computer**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CN-G2
CN-G3
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BIAS
TEST
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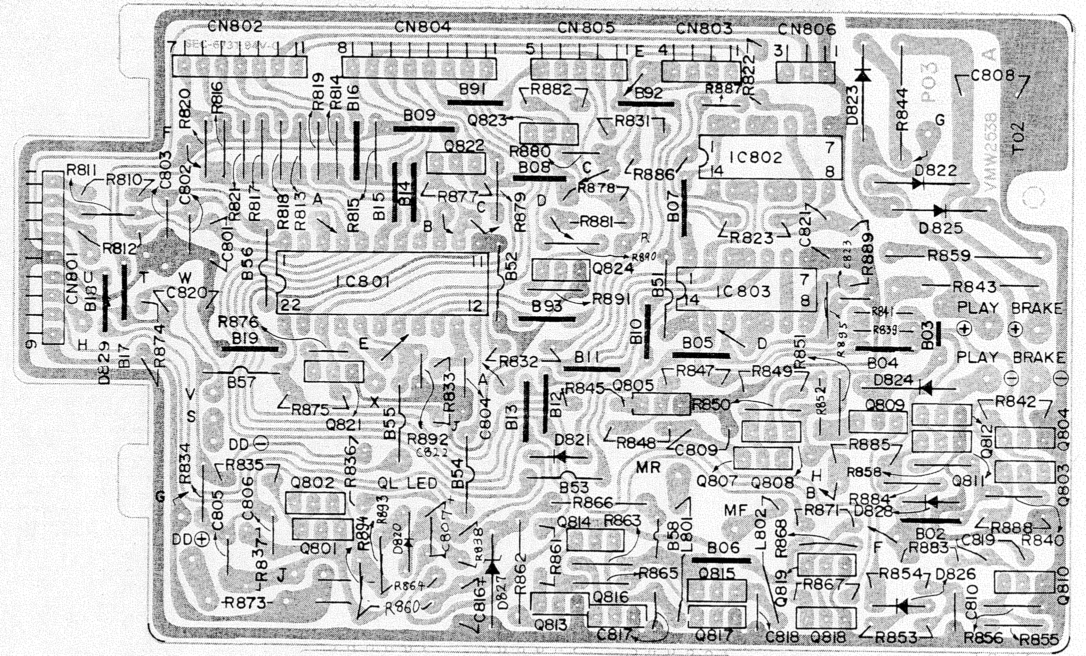
P02

**Mecha. control**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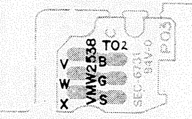
T02
VMW2538

▨ +B
▨ Earth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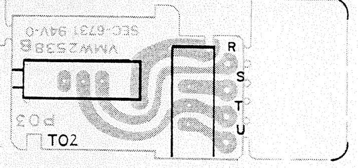
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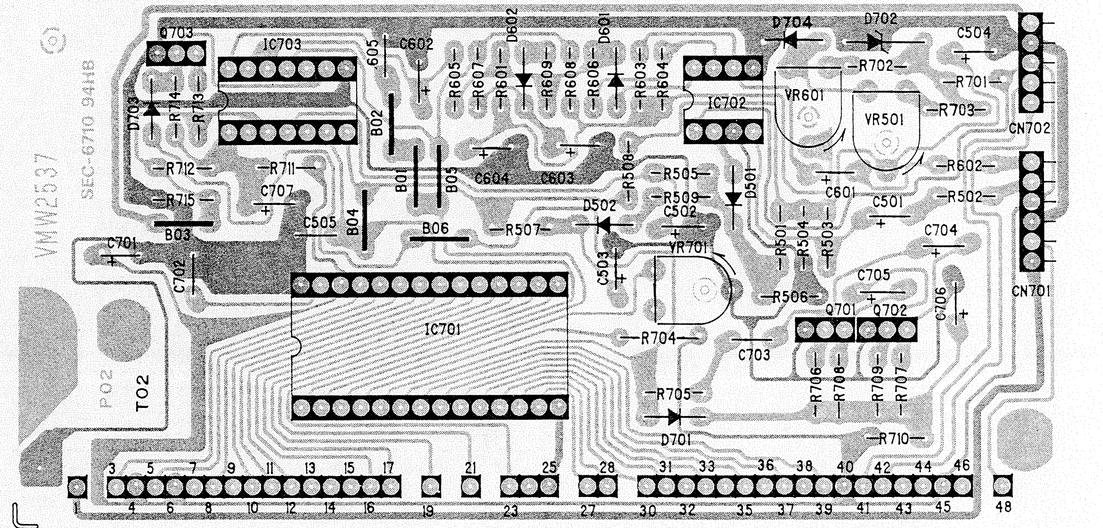
**Tape switch**

**Display circuit**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VR601
VR501
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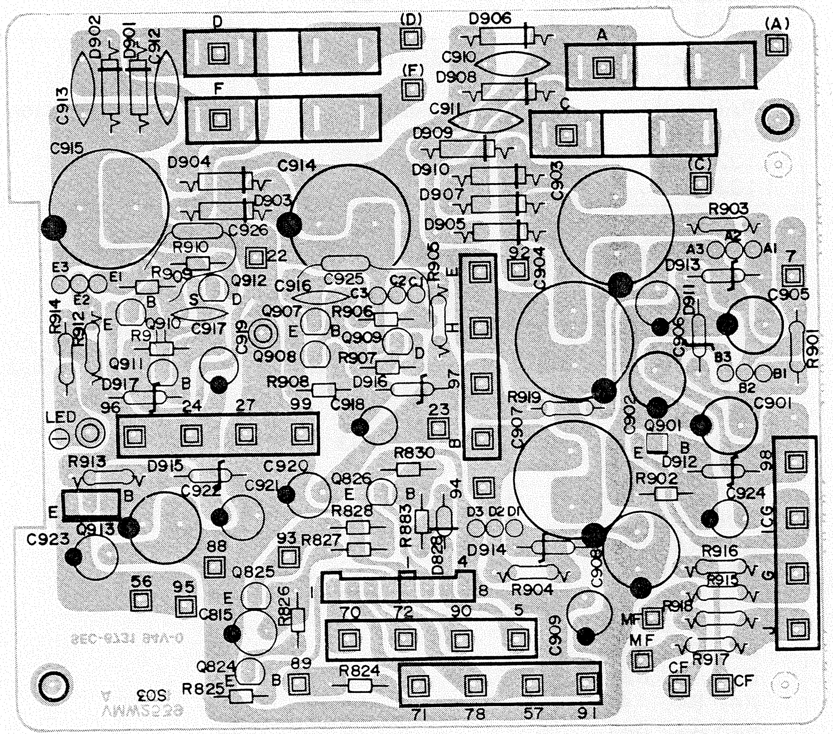
CN702
VMW2537
SEC-6710 94HB
P02
T02

Fig. 26

# Power Supply P.W.B. Parts

# Other P.W.B. Parts

## Power supply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LED
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C920
C921
C922
Q826
R828
R827
R830
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D912
C924
ICG
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Q913
C923
Q825
D914
R916
R915
R904
C909
C908
R918
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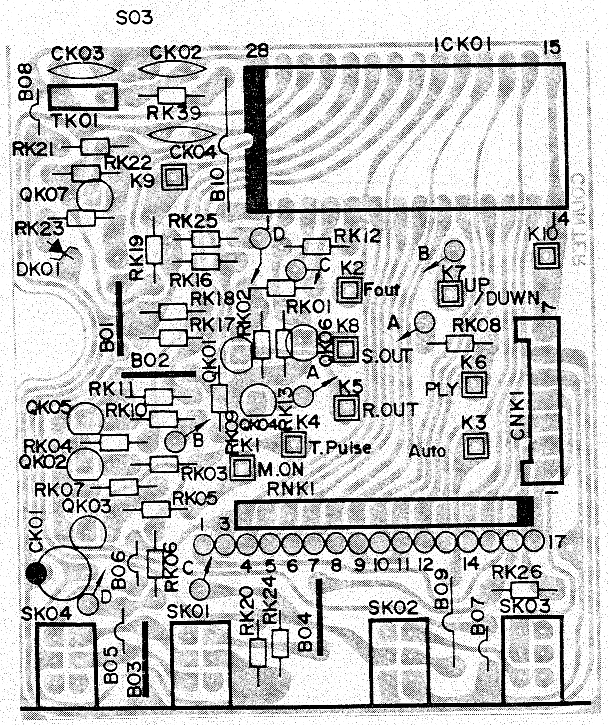
VMW3553

## Electronic Counter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QK07
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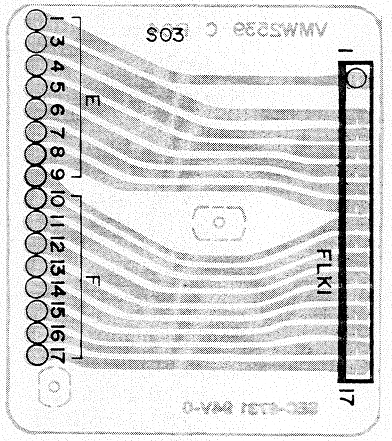
RK23
RK25
RK12
K10
DK01
RK19
RK16
RK18
RK01
K2
Fout
K7
UP
DUWN
RK17
K8
S.OUT
RK08
B01
B02
K6
PLY
RK11
RK10
K5
R.OUT
QK05
QK01
CNK1
RK04
QK02
RK09
QK04
RK13
K4
RK1
T.Pulse
Auto
K3
RK03
M.ON
RK07
RK05
RNK1
QK03
CK01
B06
RK06
RK26
SK04
SK01
RK20
RK24
B09
SK02
B07
SK03
B05
B03
B04

## FL tube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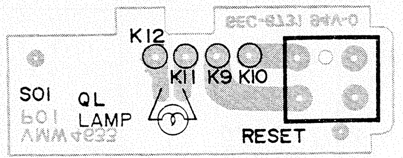
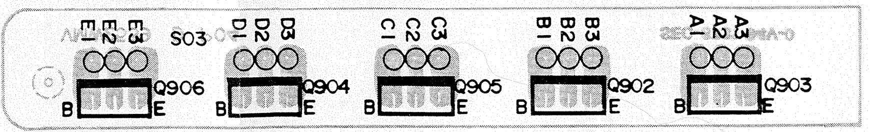
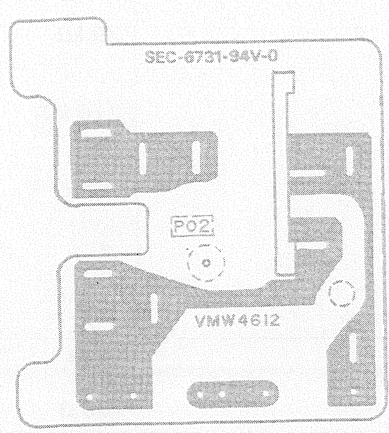
## Reset


K12
K11
K9
K10
S01
QL
LAMP
RESET
SEC-6731 94V-0
VMW

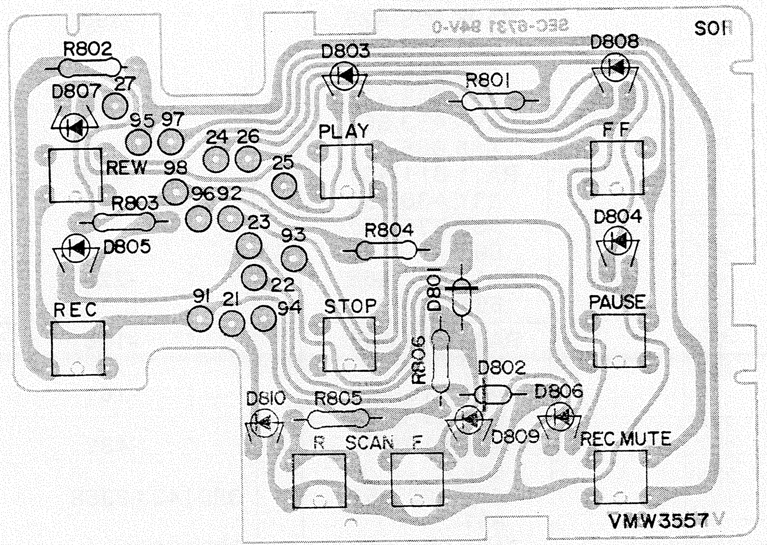
## Transistor


E1
E2
E3
S03
D1
D2
D3
C1
C2
C3
B1
B2
B3
A1
A2
A3
Q906
Q904
Q905
Q902
Q903
B
E

## Power switch


SEC-6731-94V-0
P02
VMW4612

## Touch key board


SEC-6731 94V-0
S01
R802
D803
D808
D807
R801
PLAY
FF
REW
R803
D805
R804
D804
REC
STOP
D801
PAUSE
R806
D802
D806
D810
R805
D809
R
SCAN
F
REC MUTE
VMW3557

Tape amount
(Back light)

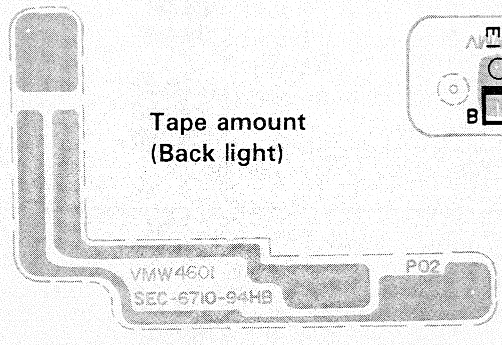

VMW4601
SEC-6710-94HB
P02

Fig. 27

## Main Amp. P.W. Board Parts List

⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|---|
| | | VMW1567-005 | P.W. Board | No supply as parts ass'y | 1 |
| R101,201,127 227,136,236 | | QRD161J-823 | C. Resistor | 82 kΩ 1/6 W | 6 |
| R102,202 | | 〃 -154 | 〃 | 150 kΩ 〃 | 2 |
| R103,203,104 204,223,148 248,17,34,35 36,38 | | 〃 -333 | 〃 | 33 kΩ 〃 | 12 |
| R105,205,13,14 29,30 | | 〃 -223 | 〃 | 22 kΩ 〃 | 6 |
| R106,206 | | 〃 -222 | 〃 | 2.2 kΩ 〃 | 2 |
| R107,207 | | 〃 -183 | 〃 | 18 kΩ 〃 | 2 |
| R108,208,128 228,145,245 37 | | 〃 -472 | 〃 | 4.7 kΩ 〃 | 7 |
| R109,209 | | 〃 -394 | 〃 | 390 kΩ 〃 | 2 |
| R110,210,06 28,41 | | 〃 -221 | 〃 | 220 Ω 〃 | 5 |
| R111,211 | | 〃 -153 | 〃 | 15 kΩ 〃 | 2 |
| R112,212 | | 〃 -391 | 〃 | 390 Ω 〃 | 2 |
| R113,213,114 214,15,21 | | 〃 -682 | 〃 | 6.8 kΩ 〃 | 6 |
| R115,215,131 231,135,235 11 | | 〃 -104 | 〃 | 100 kΩ 〃 | 7 |
| R116,216,120 220,125,225 147,247,03,16 18,19 | | 〃 -103 | 〃 | 10 kΩ 〃 | 12 |
| R117,217 | | 〃 -184 | 〃 | 180 kΩ 〃 | 2 |
| R118,218 | | 〃 -474 | 〃 | 470 kΩ 〃 | 2 |
| R119,219,23 | | 〃 -151 | 〃 | 150 Ω 〃 | 3 |
| R121,221,134 234 | | 〃 -332 | 〃 | 3.3 kΩ 〃 | 4 |
| R122,222,126 226,132,232 150,250 | | 〃 -123 | 〃 | 12 kΩ 〃 | 8 |
| R123,133,233 138,238 | | 〃 -563 | 〃 | 56 kΩ 〃 | 5 |
| R124,224 | | 〃 -820 | 〃 | 82 Ω 〃 | 2 |
| R129,229,140 240 | | 〃 -393 | 〃 | 39 kΩ 〃 | 4 |
| R130,230 | | 〃 -271 | 〃 | 270 Ω 〃 | 2 |
| R137,237 | | 〃 -274 | 〃 | 270 kΩ 〃 | 2 |
| R139,239,155 255,156,256 09 | | 〃 -124 | 〃 | 120 kΩ 〃 | 7 |
| R142,242,04 | | 〃 -273 | 〃 | 27 kΩ 〃 | 3 |
| R143,243 | | 〃 -334 | 〃 | 330 kΩ 〃 | 2 |
| R144,244 | | QWY124-016 | Bus Wire | | 2 |
| R149,249 | | QRD161J-132 | C. Resistor | 1.3 kΩ 〃 | 2 |
| R151,251,24 | | 〃 -392 | 〃 | 3.9 kΩ 〃 | 3 |
| R152,252,154 254 | | 〃 -331 | 〃 | 330 Ω 〃 | 4 |
| R153,253 | | 〃 -471 | 〃 | 470 Ω 〃 | 2 |
| R157,257 | | 〃 -102 | 〃 | 1 kΩ 〃 | 2 |
| R07,39 | | 〃 -822 | 〃 | 8.2 kΩ 〃 | 2 |
| R08 | | 〃 -153 | 〃 | 15 kΩ 〃 | 1 |
| R12 | | 〃 -473 | 〃 | 47 kΩ 〃 | 1 |
| R20,40 | | 〃 -562 | 〃 | 5.6 kΩ 〃 | 2 |
| R22,25 | | 〃 -272 | 〃 | 2.7 kΩ 〃 | 2 |
| R24 | | 〃 -392 | 〃 | 3.9 kΩ 〃 | 1 |

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|---|
| R26,42 | | QRD161J-561 | C. Resistor | 560 Ω 1/6 W | 2 |
| R27 | | QWY124-016 | Bus Wire | | 1 |
| TH101,201 | | ERT-D2FHL332S | Thermistor | | 2 |
| VR101,201,01 | | QVP8A0B-054 | Semi fixed Resistor | 50 kΩ | 3 |
| VR102,202,103 203 | | 〃 -024 | 〃 | 20 kΩ | 4 |
| VR104,204,105 205,106,206 | | QVZ3501-473 | V. Resistor | 47 kΩ | 6 |
| VRA01,B01 | | QVP8A0B-023 | Semi fixed Resistor | 2 kΩ | 2 |
| VRA02,B02 | | 〃 -033 | 〃 | 3 kΩ | 2 |
| L102,202 | | VQP0001-332 | Inductor | | 2 |
| L103,203 | | 〃 -183 | 〃 | | 2 |
| LA01,B01 | | 〃 -183 | 〃 | | 2 |
| TA01,B01,A02 B02 | | VQZ0013-001 | Dolby Filter | | 4 |
| TA03,B03 | | VQZ0014-001 | 〃 | | 2 |
| RA01,B01 | | QRD161J-162 | C. Resistor | 1.6 kΩ 1/6 W | 2 |
| RA02,B02 | | 〃 -183 | 〃 | 18 kΩ 〃 | 2 |
| RA03 | | QRD143J-152S | 〃 | 1.5 kΩ 1/4 W | 1 |
| RB03 | | QRD161J-152 | 〃 | 1.5 kΩ 1/6 W | 1 |
| RA04,B04,A20 B20,A49,B49 A60,B60 | | 〃 -103 | 〃 | 10 kΩ 〃 | 8 |
| RA05,B05,A17 B17,A46,B46 A61,B61 | | 〃 -133 | 〃 | 13 kΩ 〃 | 8 |
| RA06,B06,A13 B13,A18,B18 A26,B26,A27 B27,A34,B34 A40,B40,A45 B45,A47,B47 A55,B55,A56 B56,A58,B58 A62,B62,A70 B70 | | 〃 -473 | 〃 | 47 kΩ 〃 | 28 |
| RA07,B07,A10 B10,A63,B63 A66,B66 | | 〃 -184 | 〃 | 180 kΩ 〃 | 8 |
| RA08,B08,A25 B25,A54,B54 A64,B64 | | 〃 -393 | 〃 | 39 kΩ 〃 | 8 |
| RA09,B09,A24 B24,A53,B53 A65,B65 | | 〃 -274 | 〃 | 270 kΩ 〃 | 8 |
| RA11,B11,A31 B31,A36,B36 A38,B38,A67 B67 | | 〃 -472 | 〃 | 4.7 kΩ 〃 | 10 |
| RA12,B12,A68 B68 | | 〃 -222 | 〃 | 2.2 kΩ 〃 | 4 |
| RA14,B14,A69 B69 | | 〃 -105 | 〃 | 1 MΩ 〃 | 4 |
| RA15,B15,A16 B16,A43,B43 | | 〃 -181 | 〃 | 180 Ω 〃 | 6 |
| RA19,B19,A48 B48 | | 〃 -432 | 〃 | 4.3 kΩ 〃 | 4 |
| RA22,B22,A51 B51 | | QRD143J-395S | 〃 | 3.9 MΩ 1/4 W | 4 |
| RA23,B23,A52 B52 | | QRD161J-184 | 〃 | 180 kΩ 1/6 W | 4 |
| RA32,B32,A38 B38 | | 〃 -683 | 〃 | 68 kΩ 〃 | 4 |

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | | Q'ty |
|---|---|---|---|---|---|---|
| RA28,B28,A33 B33,A35,B35 A41,B41,A42 B42,A44,B44 B72 | | QRD161J-102 | C. Resistor | 1 kΩ | 1/6 W | 13 |
| RA29,B29,C13 C14 | | ″ -104 | ″ | 100 kΩ | ″ | 4 |
| RA30,B30 | | ″ -123 | ″ | 12 kΩ | ″ | 2 |
| RA37,B37 | | ″ -242 | ″ | 2.4 kΩ | ″ | 2 |
| RA39,B39 | | ″ -122 | ″ | 1.2 kΩ | ″ | 2 |
| RA57,B57 | | ″ -272 | ″ | 2.7 kΩ | ″ | 2 |
| RA59,B59 | | ″ -332 | ″ | 3.3 kΩ | ″ | 2 |
| RA72 | | QRD143J-102S | ″ | 1 kΩ | ″ | 1 |
| RA73,A74 | | ″ -334S | ″ | 330 kΩ | ″ | 2 |
| RB73,B74 | | QRD161J-334 | ″ | 330 kΩ | ″ | 2 |
| RC01,C04,C07 | | ″ -271 | ″ | 270 Ω | ″ | 3 |
| RC02,C03,C05 C06,C08,C11 C12 | | ″ -223 | ″ | 22 kΩ | ″ | 7 |
| RC09 | | ″ -153 | ″ | 15 kΩ | ″ | 1 |
| RC10,A75,B75 B76 | | ″ -562 | ″ | 5.6 kΩ | ″ | 4 |
| C101,201 | | QCS11HJ-151 | C. Capacitor | 150 pF | 50 V | 2 |
| C102,202 | | ″ -271 | ″ | 270 pF | ″ | 2 |
| C103,203,112 212 | | ″ -470 | ″ | 47 pF | ″ | 4 |
| C104,204,08 | | QFM41HJ-682 | M. Capacitor | 0.0068μF | ″ | 3 |
| C105,205,114 214 | | QET41AR-107 | E. Capacitor | 100 μF | 10 V | 4 |
| C106,206 | | QFM41HJ-822 | M. Capacitor | 0.0082 μF | 50 V | 2 |
| C107,207,116 216,119,219 122,222,12 26 | | QET41HR-335 | E. Capacitor | 3.3 μF | ″ | 10 |
| C108,208,128 228 | | QFM41HJ-123 | M. Capacitor | 0.012 μF | ″ | 4 |
| C109,209 | | QET41HR-104N | E. Capacitor | 0.1 μF | ″ | 2 |
| C110,210,19 | | QCS11HJ-100 | C. Capacitor | 10 pF | ″ | 3 |
| C111,211 | | QEE41EM-335 | E. Capacitor | 3.3 μF | 25 V | 2 |
| C113,213 | | QCF11HJ-220 | C. Capacitor | 22pF | 50 V | 2 |
| C115,215,04 | | QET41HR-105 | E. Capacitor | 1 μF | ″ | 3 |
| C117,217 | | QFM41HJ-102 | M. Capacitor | 0.001 μF | ″ | 2 |
| C118,218 | | ″ -182 | ″ | 0.0018 μF | ″ | 2 |
| C120,220 | | QFN41HJ-124 | ″ | 0.12 μF | ″ | 2 |
| C124,224,125 225,04,05 | | QET41ER-336 | E. Capacitor | 33 μF | 25 V | 6 |
| C126,226 | | QFM41HJ-392 | M. Capacitor | 0.0039 μF | 50 V | 2 |
| C127,227,09 | | ″ -103 | ″ | 0.01 μF | ″ | 3 |
| C129,229 | | QCS11HJ-391 | C. Capacitor | 390 pF | ″ | 2 |
| C130,230 | | QCS12HJ-151 | ″ | 150 pF | ″ | 2 |
| C131,231 | | QCY12HK-221 | ″ | 220 pF | 500 V | 2 |
| C133,223,03 | | QET41HR-475N | E. Capacitor | 4.7 μF | 50 V | 3 |
| C07,18,27,29 | | QET41AR-227 | ″ | 220 μF | 10 V | 4 |
| C10 | | QET41HR-474N | ″ | 0.47 μF | 50 V | 1 |
| C11 | | QFN41HJ-104 | T.F. Capacitor | 0.1 μF | ″ | 1 |
| C13 | ⚠ | QET41ER-227N | E. Capacitor | 220 μF | 25 V | 1 |
| C14,15 | | QET41AR-477N | ″ | 470 μF | 10 V | 2 |
| C16 | | QET41CR-227N | ″ | 220 μF | 16 V | 1 |
| C28 | | QCF11HP-103 | C. Capacitor | 0.01 μF | 50 V | 1 |
| CC01,C02,C03 | | QET41ER-476 | E. Capacitor | 47 μF | 25 V | 3 |
| CA01,B01,A27 B27 | | QET41HR-105 | ″ | 1 μF | 50 V | 4 |
| CA02,B02 | | QCS11HJ-151 | C. Capacitor | 150pF | | 2 |
| CA03,B03 | | QFM41HJ-182 | M. Capacitor | 0.0018 μF | ″ | 2 |

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|---|
| CA04,B04 | | QFM41HJ-272 | M. Capacitor | 0.0027 μF 50 V | 2 |
| CA05,B05,A12 B12,A20,B20 A36,B36,A50 B50 | | ″ -473 | ″ | 0.047 μF ″ | 10 |
| CA06,B06,A17 B17,A33,B33 | | ″ -273 | ″ | 0.027 μF ″ | 6 |
| CA07,B07,A18 B18,A34,B34 A45,B45 | | ″ -103 | ″ | 0.01 μF ″ | 8 |
| CA08,B08,A11 B11,A19,B19 A21,B21,A35 B35,A37,B37 A46,B46,A49 B49 | | QET41HR-106 | E. Capacitor | 10 μF ″ | 16 |
| CA09,B09,A16 B16,A32,B32 A47,B47 | | QFM41HJ-562 | M. Capacitor | 0.0056 μF ″ | 8 |
| CA10,B10,A48 B48 | | ″ -224 | ″ | 0.22 μF ″ | 4 |
| CA13,B13 | | ″ -154 | ″ | 0.15 μF ″ | 2 |
| CA14,B14 | | QCS11HJ-471 | C. Capacitor | 470 pF ″ | 2 |
| CA15,B15,A26 B26,A28,B28 A31,B31 | | QET41HR-335N | E. Capacitor | 3.3 μF ″ | 8 |
| CA22,B22,A23 B23,A38,B38 A39,B39 | | QFN41HJ-104 | M. Capacitor | 0.1 μF ″ | 8 |
| CA24,B24,A25 B25,A40,B40 A41,B41 | | ″ -334 | ″ | 0.33 μF ″ | 8 |
| CA29,B29 | | QFM41HJ-122 | ″ | 0.0012 μF ″ | 2 |
| CA30,B30 | | ″ -152 | ″ | 0.0015 μF ″ | 2 |
| CA42,B42 | | ″ -153 | ″ | 0.015 μF ″ | 2 |
| CA43,B43 | | QCS11HJ-471 | C. Capacitor | 470pF | 2 |
| CA44,B44 | | QFM41HJ-273 | M. Capacitor | 0.027 μF ″ | 2 |
| CA51,B51 | | QFN41HJ-154 | T.F. Capacitor | 0.15 μF ″ | 2 |
| CA52,B52 | | QCS11HJ-681 | C. Capacitor | 680 pF | 2 |
| | | VMJ5004-003 | Jack Ass'y | for MIC & H.P. | 1 |
| | | QST4741-V01 | Push Switch Ass'y | | 1 |
| CA53,B53,A54 B54 | | QFM41HJ-332 | M. Capacitor | 0.0033 μF ″ | 4 |
| CN01 | | QMV5004-004 | Plug Ass'y | for P. Head | 1 |
| CN02 | | QMV5005-004 | ″ | for R. Head | 1 |
| | | E43727-002 | Tab | | 58 |
| | | VMZ0005-001 | Post Pin | | 1 |
| Q101,201,102 202 | | 2SC1844(E,F) | Si. Transistor | | 4 |
| Q103,203,104 204,108,208 109,209 | | 2SC1845(E,U) | ″ | | 8 |
| Q105,205 | | 2SA992(E,F) | ″ | or 2SA872A(E,F) | 2 |
| Q106,206,112 212,A02-A13 B02-B13,A15 B15,01,03 | | 2QC1684(R,S) | ″ | or 2SC2785(E,F) | 22 |
| Q107,207,111 211,113,213 | | 2SD1020(JHFE) | ″ | or 2SC2001(L,K) | 6 |
| Q110,210 | | 2SA992(E,F) | ″ | | 2 |
| QA01,B01,A14 B14 | | 2SD889(R,S) | ″ | | 4 |
| Q02,04,06 C01-C04 | | 2SA1175(H,F,E) | ″ | | 7 |
| Q05 | ⚠ | 2SC1684(R,S) | ″ | or 2SC2785(E,F) | 1 |
| IC01 | | UPC4557C | IC | | 1 |
| IC02 | | BA335 | ″ | | 1 |

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|---|
| IC03 | | UPC4556C | IC | | 1 |
| IC04,05 | | MSM4053 | 〃 | or TC4053BP | 2 |
| ICA01-A04<br>B01-B04 | | NE650N | 〃 | | 8 |
| ICC01 | | UPC4558C | 〃 | | 1 |
| D01-07,A01,B01<br>A03,B03,A05<br>B05,A06,B06<br>A07,B07,C01 | | MA165 | Si. Diode | | 18 |
| DA02,B02,A08<br>B08 | | 1K34A | Ge. Diode | | 4 |
| DA04,B04 | | MA150 | Si. Diode | | 2 |

⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

## Mecha. Control P.W. Board Parts List

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|---|
| | | VMW2538-000A | P.W. Board | No supply as parts ass'y | 1 |
| R810~812,840 | | QRD161J-471 | C. Resistor | 470 Ω 1/6 W | 4 |
| R813 | | 〃 -272 | 〃 | 2.7 kΩ 〃 | 1 |
| R814~817,831<br>832,893,894 | | 〃 -472 | 〃 | 4.7 kΩ 〃 | 8 |
| R818~823,858 | | 〃 -271 | 〃 | 270 Ω 〃 | 7 |
| R833,841,842<br>851,855,856<br>867,875<br>877~879,881<br>882,885,886<br>888,890 | | 〃 -103 | 〃 | 10 kΩ 〃 | 17 |
| R834,835,845<br>847 | | 〃 -223 | 〃 | 22 kΩ 〃 | 4 |
| R836 | | 〃 -153 | 〃 | 15 kΩ 〃 | 1 |
| R837 | | 〃 -154 | 〃 | 150 kΩ 〃 | 1 |
| R838 | | QRD143J-2R2S | 〃 | 2.2 Ω 〃 | 1 |
| R839,853,891<br>895 | | QRD161J-102 | 〃 | 1 kΩ 〃 | 4 |
| R843 | ⚠ | QRG029J-471 | OMF Resistor | 470 Ω 2 W | 1 |
| R844 | ⚠ | QRH124J-220 | C. Resistor | 22 Ω 1/2 W | 1 |
| R848 | | QRD161J-101 | 〃 | 100 Ω 1/6 W | 1 |
| R849 | | 〃 -100 | 〃 | 10 Ω 〃 | 1 |
| R850 | ⚠ | 〃 -333 | 〃 | 33 kΩ 〃 | 1 |
| R852 | ⚠ | 〃 -332 | C. Resistor | 3.3 kΩ 〃 | 1 |
| R854 | | 〃 -183 | 〃 | 18 kΩ 〃 | 1 |
| R859 | ⚠ | QRX029J-8R2 | MF. Resistor | 8.2 Ω 2 W | 1 |
| R860 | ⚠ | QRG019J-820 | OMF. Resistor | 82 Ω 1 W | 1 |
| R862,866 | | QRD121J-681 | C. Resistor | 680 Ω 1/2 W | 2 |
| R863,865 | | QRD161J-152 | 〃 | 1.5 kΩ 1/6 W | 2 |
| R864 | ⚠ | QRG019J-220 | OMF Resistor | 22 Ω 1 W | 1 |
| R873 | ⚠ | QRD149J-4R7S | Fail Safety Resistor | 4.7 Ω 1/4 W | 1 |
| R874 | ⚠ | QRD161J-561 | C. Resistor | 560 Ω 1/6 W | 1 |
| R876,880 | | QRD143J-103S | 〃 | 1 kΩ 〃 | 2 |
| R883 | | QRD161J-124 | 〃 | 12 kΩ 〃 | 1 |
| R884 | | 〃 -221 | 〃 | 220 Ω 〃 | 1 |
| R889 | | 〃 -122 | 〃 | 1.2 kΩ 〃 | 1 |
| R892 | | QRD143J-102S | 〃 | 1 KΩ 〃 | 1 |
| R896 | | QRD161J-391 | 〃 | 390 Ω 〃 | 1 |
| C801~803,817,<br>818,823,824<br>890,891 | | QCF11HP-103 | C. Capacitor | 0.01 μF 50 V | 9 |
| C804 | | QET41HR-224N | E. Capacitor | 0.22 μF 〃 | 1 |
| C805 | | QFM41HJ-223 | C. Capacitor | 0.022 μF 〃 | 1 |

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|---|
| C806 | | QFN41HJ-224 | E. Capacitor | 0.22 µF 10 V | 1 |
| C807 | | QET41AR-227N | 〃 | 220 µF 10 V | 1 |
| C808 | | QET41HR-477N | 〃 | 470 µF 50 V | 1 |
| C809 | | QET41CR-336N | 〃 | 33 µF 16 V | 1 |
| C810,819 | | QET41HR-475N | 〃 | 4.7 µF 50 V | 2 |
| C811 | | QET41CR-107N | 〃 | 100 µF 16 V | 1 |
| C816 | | QET41ER-476 | 〃 | 47 µF 25 V | 1 |
| C820 | | QET41HR-106N | 〃 | 10 µF 50 V | 1 |
| C821 | | QET41AR-476N | 〃 | 47µF 10 V | 1 |
| D820,821,826 829 | | MA165 | Si. Diode | | 4 |
| D822,823,824 | | 10E1 | 〃 | | 3 |
| D825 | ⚠ | 10E1-B | 〃 | | 1 |
| D827 | | RD11F(B) | Zener Diode | | 1 |
| Q801~803,805 810,811,813 818,821,824 | | 2SC2785(E,F) | Si. Transistor | or 2SC1684(R,S) | 10 |
| Q804,812 | ⚠ | 2SD571(LA,KA) | 〃 | | 1 |
| Q807,808 | | 2SC945L(QA,PA) | 〃 | | 2 |
| Q809 | ⚠ | 2SB605(LA,KA) | 〃 | or 2SA684(R,S)NC | 1 |
| Q814,815,825 | | 2SD468(B,C) | 〃 | | 3 |
| Q816,817 | | 2SC1213(C,D) | 〃 | | 2 |
| Q822,823 | | 2SA1175(H,F,E) | 〃 | or 2SA564(R,S) | 2 |
| | | VMA4113-001 | Spacer | | 1 |
| IC801 | | MSL9312RS | IC | | 1 |
| IC802,803 | | M74LS00P | 〃 | or HD 74LS00 | 2 |
| CN801 | | QMV5004-009 | Plug Ass'y | | 1 |
| CN802 | | 〃 -007 | 〃 | | 1 |
| CN803 | | 〃 -004 | 〃 | | 1 |
| CN804 | | 〃 -008 | 〃 | | 1 |
| CN805 | | 〃 -005 | 〃 | | 1 |
| CN806 | | 〃 -003 | 〃 | | 1 |
| L801,802 | | T41572-001 | Inductor | | 2 |
| | | 51739-2 | Lug | | 1 |
| **Hall IC P.W.B.** | | | | | |
| | | VMW2538-＊＊＊C | P.W. Board | | 1 |
| IC804 | | DN6838A | Hall IC | | 1 |
| **A.R. Switch TAPE Switch P.W.B.** | | | | | |
| | | VMW2538-＊＊＊B | P.W. Board | | 1 |
| S811,812 | | QSP0029-001 | Push Switch | | 2 |

⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

## Power supply P.W. Board Parts List

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | | Q'ty |
|---|---|---|---|---|---|---|
| | | VMW2539-005 | P.W. Board (A) | No supply as parts ass'y | | 1 |
| R825 | | QRD161J-153 | C. Resistor | 15 kΩ | 1/6 W | 1 |
| R826 | | 〃 -150 | 〃 | 15 Ω | 〃 | 1 |
| R827 | | 〃 -104 | 〃 | 100 kΩ | 〃 | 1 |
| R828 | | 〃 -682 | 〃 | 6.8 kΩ | 〃 | 1 |
| R829 | | 〃 -563 | 〃 | 56 kΩ | 〃 | 1 |
| R830,833 | | 〃 -472 | 〃 | 4.7 kΩ | 〃 | 2 |
| R901 | | QRD147J-102S | 〃 | 1 kΩ | 1/4 W | 1 |
| R902 | | QRD161J-222 | 〃 | 2.2 kΩ | 1/6 W | 1 |
| R903 | ⚠ | QRD146J-102S | Fail Safety Resistor | 1 kΩ | 1/4 W | 1 |
| R904 | ⚠ | QRD149J-821S | 〃 | 820 Ω | 〃 | 1 |
| R905,912 | ⚠ | 〃 -2R2S | 〃 | 2.2 Ω | 〃 | 2 |
| R906,909 | | QRD161J-271 | C. Resistor | 270 Ω | 1/6 W | 2 |
| R907,910 | | 〃 -331 | 〃 | 330 Ω | 〃 | 2 |
| R908,911 | | 〃 -681 | 〃 | 680 Ω | 〃 | 2 |
| R913 | ⚠ | QRD149J-331S | Fail Safety Resistor | 330 Ω | 1/4 W | 1 |
| R914 | ⚠ | QRD147J-391S | C. Resistor | 390 Ω | 〃 | 1 |
| R915,917 | ⚠ | QRD149J-4R7S | Fail Safety Resistor | 4.7 Ω | 〃 | 2 |
| R916,918 | ⚠ | QRD147J-820S | C. Resistor | 82 Ω | 〃 | 2 |
| R919 | ⚠ | QRD149J-100S | Fail Safety Resistor | 10 Ω | 〃 | 1 |
| R920 | | QRD146J-1R0S | 〃 | 1 Ω | 〃 | 1 |
| C815 | | QET41CR-476N | E. Capacitor | 47 μF | 16 V | 1 |
| C901,902 | | QET41ER-107N | 〃 | 100 μF | 25 V | 2 |
| C903 | ⚠ | QET41VR-108N | 〃 | 100 μF | 35 V | 1 |
| C904 | ⚠ | 〃 -477N | 〃 | 470 μF | 〃 | 1 |
| C906 | | QET41ER-336N | 〃 | 33 μF | 25 V | 1 |
| C907 | ⚠ | QET41ER-477N | 〃 | 470 μF | 〃 | 1 |
| C908,922 | | QET40JR-477N | 〃 | 470 μF | 6.3 V | 2 |
| C909,920,921<br>923 | | QET41AR-107N | 〃 | 100 μF | 10 V | 4 |
| C910～913 | | QCF12HP-103 | C. Capacitor | 0.01 μF | 500 V | 4 |
| C914,915 | ⚠ | QET41ER-228N | E. Capacitor | 2200 μF | 25 V | 2 |
| C916,917 | | QCS11HJ-331 | C. Capacitor | 330 pF | 50 V | 2 |
| C918,919 | | QET41CR-336N | E. Capacitor | 33 μF | 16 V | 2 |
| C924 | | QET41HJR-106N | 〃 | 10 μF | 50 V | 1 |
| C925,926 | | QFM41HJ-103 | M. Capacitor | 0.01 μF | 〃 | 2 |
| CN901 | | QMV5005-004 | Plug Ass'y | | | 1 |
| | | E43727-002 | Tab | | | 18 |
| | | VMZ0005-001 | Post Pin | | | 2 |
| | | VMZ0016-104 | Wrapping Terminal | | | 5 |
| | | TAZ000331-02 | Fuse Holder | DD-99A/B/C/E | | 8 |
| | | TAZ000331-02 | 〃 | DD-99U | | 2 |
| | ⚠ | QMF51A2-1R25BS | Fuse | DD-99B | F1,F2 | 2 |
| | ⚠ | 〃 -1R25 | 〃 | DD-99A/E | 〃 | 2 |
| | ⚠ | 〃 -R50 | 〃 | DD-99U | 〃 | 2 |
| | ⚠ | QMF51A2-R63BS | 〃 | DD-99B | F1,F2 | 2 |
| | ⚠ | -R63 | 〃 | DD-99A/E | 〃 | 2 |
| | ⚠ | TAZ000509-09 | Fuse Seal | DD-99U | | 1 |
| D901～904 | ⚠ | 10E1-B | Si. Diode | | | 4 |
| D905～910 | ⚠ | 10E2-B | 〃 | | | 6 |
| D911 | ⚠ | RD20E(B3) | Zener Diode | | | 1 |
| D912 | | RD10E(B3) | 〃 | | | 1 |
| D913 | ⚠ | RD24E(B3) | 〃 | | | 1 |
| D914,915 | ⚠ | RD5.6E(B3) | 〃 | | | 2 |
| D916,917 | ⚠ | RD9.1E(B1) | 〃 | | | 2 |
| D828 | | MA165 | Si. Diode | | | 1 |
| Q824,825,907<br>908 | | 2SC1684(R,S) | Si. Transistor | or 2SC2785T(E,F) | | 4 |
| Q901 | | 2SB605(LA,KA) | 〃 | | | 1 |
| Q902 | ⚠ | 2SC1213(C,D) | 〃 | | | 1 |
| Q909,912 | | 2SK105(E,F) | 〃 | | | 2 |
| Q913 | | 2SB772(Q,P) | 〃 | | | 1 |
| Q910,911,926 | | 2SA1175(H,F,E) | 〃 | | | 3 |

## Display P.W. Board Parts List

⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|---|
| | | VMW2537-003 | P.W. Board | No supply as parts ass'y (or-101) | 1 |
| | | BG-108Z | FL. Tube | | 1 |
| IC701 | | AN6870N | IC | | 1 |
| IC702 | | UPC4558C | ″ | | 1 |
| IC703 | | UPD4066BC | ″ | | 1 |
| Q701,702,703 | | 2SC1685(R,S) | Si. Transistor | or 2SC2785(E,F) | 3 |
| D501,502,601 602,701,703 704 | | MA165 | ″ | | 7 |
| D702 | | RD4.3E(B3) | Zener Diode | | 1 |
| R501,601 | | QRD161J-562 | C. Resistor | 5.6 kΩ 1/6 W | 2 |
| R502,602 | | ″ -683 | ″ | 68 kΩ ″ | 2 |
| R503,603,504 604,716 | | ″ -223 | ″ | 22 kΩ ″ | 5 |
| R505,605,507 607 | | ″ -563 | ″ | 56 kΩ ″ | 4 |
| R506,606 | | ″ -564 | ″ | 560 kΩ ″ | 2 |
| R508,608 | | ″ -393 | ″ | 39 kΩ ″ | 2 |
| R509,609 | | ″ -391 | ″ | 390 Ω ″ | 2 |
| R701,702,703 | | ″ -222 | ″ | 2.2 kΩ | 3 |
| R704 | ⚠ | QRD149J-151S | Fail Safety Resistor | 150 Ω 1/4 W (DD-99C/J/U) | 1 |
| | ⚠ | QRH144J-151 | Fusible Resistor | ″ (DD-99A/B/E) | 1 |
| R705 | | QRD161J-271 | C. Resistor | 270 Ω 1/6 W | 1 |
| R706,709,712 714 | | ″ -103 | ″ | 10 kΩ ″ | 4 |
| R707,708 | | ″ -274 | ″ | 270 kΩ ″ | 2 |
| R710 | | ″ -273 | ″ | 27 kΩ ″ | 1 |
| R711 | | ″ -332 | ″ | 3.3 kΩ ″ | 1 |
| R713 | | ″ -104 | ″ | 100 kΩ ″ | 1 |
| VR701 | | QVP8A0B-024 | V. Resistor | 20 kΩ | 1 |
| VR501,601 | | ″ -023 | ″ | 2 kΩ | 1 |
| C501,601 | | QET41HR-474N | E. Capacitor | 0.47 μF 50 V | 2 |
| C502,602 | | ″ -105N | ″ | 1 μF ″ | 2 |
| C503,603 | | ″ -335N | ″ | 3.3 μF ″ | 2 |
| C504,604 | | QET41ER-336N | ″ | 33 μF 25 V | 2 |
| C505,605 | | QFM41HJ-102 | Mylar Capacitor | 0.001 μF 50 V | 2 |
| C701,707 | | QET41ER-107N | E. Capacitor | 100 μF 25 V | 2 |
| C702 | | QFM41HJ-473 | C. Capacitor | 0.047 μF 50 V | 1 |
| C703 | | ″ -103 | ″ | 0.01 μF ″ | 1 |
| C704,705 | | QET41HR-475N | E. Capacitor | 4.7 μF ″ | 2 |
| C706 | | QET41AR-476N | ″ | 47 μF 10 V | 1 |
| CN701 | | QMV5004-006 | Plug Ass'y | | 1 |
| CN702 | | ″ -005 | ″ | | 1 |
| FL | | VKL5161-001 | Shield Plate | | 1 |

## Computer P.W. Board Parts List

⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|---|
| | | VMW1568-002 | P.W. Board | No supply as parts ass'y | 1 |
| RE01,F01 | | QRD161J-332 | C. Resistor | 3.3 kΩ 1/6 W | 2 |
| RE02,F02,G89 H07 | | ″ -472 | ″ | 4.7 kΩ ″ | 4 |
| RE03,F03,G44 G50,G87 | | ″ -102 | ″ | 1 kΩ ″ | 5 |
| RE04,F04,G33 G59,G85 | | ″ -153 | ″ | 15 kΩ ″ | 5 |
| RE05,F05,E13 F13,G43,G45 F47,G48,G49 G51,G52,G53 G55,G60,G81 G84,G91～G94 H09,H12 H18～H21,H65 | | QRD161J-103 | C. Resistor | 10 kΩ 1/6 W | 27 |

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|---|
| RE06,F06,E12 F12,G01~G04 G14,G18~G21 G58,G86,G97 G99,H02,H11 H13,H15~H17 H22,H52,H54 H56,H62;H64 | | QRD161J-223 | C. Resistor | 22 kΩ 1/6 W | 29 |
| RE07,F07,G83 | | ″ -563 | ″ | 56 kΩ ″ | 3 |
| RE08,F08,H05 | | ″ -822 | ″ | 8.2 kΩ ″ | 3 |
| RE09,F09,G40 G41 | | ″ -104 | ″ | 100 kΩ ″ | 4 |
| RE10,F10,E14 F14 | | ″ -823 | ″ | 82 kΩ ″ | 4 |
| RE11,F11 | | ″ -154 | ″ | 150 kΩ ″ | 2 |
| RE15,F15 | | ″ -184 | ″ | 180 kΩ ″ | 2 |
| RE16,F16,G05 G15,G46,G57 G63,G64,G65 G70,G72,G73 G95,H53,H55, H57,H61,H63 | | ″ -333 | ″ | 33 kΩ ″ | 18 |
| RE17,F17 | | ″ -151 | ″ | 150 Ω ″ | 2 |
| RE18,F18 | | ″ -331 | ″ | 330 Ω ″ | 2 |
| RE19,F19,G31 G34,G90,H31 | | ″ -392 | ″ | 3.9 kΩ ″ | 6 |
| RE20,F20,H10 | | ″ -393 | ″ | 39 kΩ ″ | 3 |
| RE21,F21 | | ″ -682 | ″ | 6.8 kΩ ″ | 2 |
| RE23~E27 F23~F27 | | ″ -474 | ″ | 470 kΩ ″ | 10 |
| RG06,G12,G13 G96 | | ″ -273 | ″ | 27 kΩ ″ | 4 |
| RG08 | | ″ -152 | ″ | 1.5 kΩ ″ | 1 |
| RG09 | | ″ -123 | ″ | 12 kΩ ″ | 1 |
| RG10 | | ″ -122 | ″ | 1.2 kΩ ″ | 1 |
| RG11,G98,H01 | | ″ -562 | ″ | 5.6 kΩ ″ | 3 |
| RG16,G17,H51 | | ″ -683 | ″ | 680 kΩ ″ | 3 |
| RG22,H30,H32 | | ″ -222 | ″ | 2.2 kΩ ″ | 3 |
| RG23 | | QRD143J-222S | ″ | 2.2 kΩ 1/4 W | 1 |
| RG24,G36,G37 | | QRD161J-473 | ″ | 47 kΩ 1/6 W | 3 |
| RG25 | | ″ -514 | ″ | 510 kΩ ″ | 1 |
| RG26,G27 | | ″ -470 | ″ | 47 Ω ″ | 2 |
| RG28 | | ″ -242 | ″ | 2.4 kΩ ″ | 1 |
| RG35 | ⚠ | QRD149J-150S | Fail Safety Resistor | 15 kΩ 1/4 W | 1 |
| RG42 | ⚠ | ″ -220S | ″ | 22 Ω | 1 |
| RG61,62 | | QRD161J-821 | C. Resistor | 820 Ω 1/6 W | 2 |
| RG73 | | ″ -333 | ″ | 33 kΩ ″ | 1 |
| RG80 | | ″ -334 | ″ | 330 kΩ ″ | 1 |
| RG88 | | ″ -681 | ″ | 680 Ω ″ | 1 |
| RH06 | | ″ -272 | ″ | 2.7 kΩ ″ | 1 |
| RH60 | | QRD143J-223S | ″ | 22 kΩ 1/4 W | 1 |
| RNG1 | | VCR0003-001 | R Network | | 1 |
| VRG01~G04 | | QVP8A0B-024 | Semi Fixed Resistor | 20 kΩ | 4 |
| VRG05 | | ″ -014 | ″ | 10 kΩ | 1 |
| CE01,F01,G12 | | QET41HR-335 | E. Capacitor | 3.3 μF 50 V | 3 |
| CE02,F02 | | QCS11HJ-391 | C. Capacitor | 390pF | 2 |
| CE03,F03 | | QFM41HJ-562 | M, Capacitor | 0.0056 μF ″ | 2 |
| CE04,F04,G17 | | ″ -332 | ″ | 0.0033 μF ″ | 3 |
| CE05,F05 | | QCS11HJ-301 | C. Capacitor | 300 pF ″ | 2 |
| CE06,F06 | | ″ -561 | ″ | 560pF | 2 |
| CE07,F07,E08 F08,E12,F12 G02 | | QFM41HJ-152 | M. Capacitor | 0.0015 μF ″ | 7 |

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|---|
| CE09,F09,E10 F10,E11,F11 G03 | | QFM41HJ-123 | M. Capacitor | 0.012 μF 50 V | 7 |
| CE13,F13 | | ″ -102 | ″ | 0.001 μF ″ | 2 |
| CG01 | | ″ -153 | ″ | 0.0015 μF ″ | 1 |
| CG04 | | ″ -822 | ″ | 0.0082 μF ″ | 1 |
| CG05 | | ″ -823 | ″ | 0.082 μF ″ | 1 |
| CG06 | | ″ -223 | ″ | 0.022 μF ″ | 1 |
| CG07,G08 | | ″ -274 | ″ | 0.27 μF ″ | 2 |
| CG10 | | QCF11HP-102Z | E. Capacitor | 0.001 μF ″ | 1 |
| CG11 | | QFP82XJ-123 | P.P. Capacitor | 0.012 μF ″ | 1 |
| CG13 | | ″ -153 | ″ | 0.015 μF ″ | 1 |
| CG14,19 | | QFM41HJ-223 | M. Capacitor | 0.022 μF ″ | 2 |
| CG15,G16 | | ″ -472 | ″ | 0.0047 μF ″ | 2 |
| CG20 | | QET41HR-334N | E. Capacitor | 0.33 μF ″ | 1 |
| CG21 | | QFP82XJ-682 | P.P. Capacitor | 0.0068 μF ″ | 1 |
| CG23,G24 | | QET41HR-105 | E. Capacitor | 1 μF ″ | 2 |
| CG25,G33 G37~G39 | | QCF11HP-103 | C. Capacitor | 0.01 μF ″ | 5 |
| CG26 | | QFM41HJ-474 | M. Capacitor | 0.47 μF ″ | 1 |
| CG28 | | QET41CR-227N | E. Capacitor | 220 μF 16 V | 1 |
| CG29 | | QCS11HJ-471 | C. Capacitor | 470pF 50 V | 1 |
| CG30 | | QCS11HJ-111 | ″ | 110pF | 1 |
| CG31 | | QFM41HJ-563 | M. Capacitor | 0.056 μF ″ | 1 |
| CG32 | | ″ -392 | ″ | 0.0039 μF ″ | 1 |
| CG35,G36 | | QET41ER-336N | E. Capacitor | 33 μF 25 V | 2 |
| LG01 | | VQP0001-103 | Inductor | | 1 |
| LG02,G03 | | ″ -183 | ″ | | 2 |
| LG04 | | ″ -473 | ″ | | 1 |
| | | VYH4514-002 | Shield Case | for O.S.C. Coil | 2 |
| TG01,G02 | | VQH1009-015 | O.S.C. Coil | | 2 |
| TG03 | | CSB400P | Ceralock | | 1 |
| CN-G1 | | QMV5005-004 | Plug Ass'y | for Key | 1 |
| CN-G2 | | ″ -003 | ″ | for Mecha. | 1 |
| CN-G3 | | ″ -003 | ″ | for E. Head | 1 |
| ICG01 | | MSM4052 | CMOS IC | or TC4052BP | 1 |
| ICG02 | | UPD546C-215 | PMOS IC | | 1 |
| ICG04 | | HD74LS86 | IC | or M74LS86P | 1 |
| ICG05 | | MSM4051 | CMOS IC | or TC4051BP | 1 |
| ICG06,G07 | | HD74LS00 | IC | or M74LS00P | 2 |
| ICE01,F01,E02 F02,E03,F03 G09,G10,G12 G18 | | MSM4066 | CMOS IC | or UPD4066BC | 10 |
| ICG08,G14,G15 | | UPC4557C | IC | | 3 |
| ICG13 | | MSM4024 | CMOS IC | or TC4024BP | 1 |
| ICG16 | | HD74LS175 | IC | or M74LS175 | 1 |
| ICG17 | | M74LS03 | ″ | or HD74LS03 | 1 |
| QG01 | | 2SC3064(E,F,G) | Si. Transistor | | 1 |
| QG03 | ⚠ | 2SC11642(B,C) | ″ | | 1 |
| QG04 | ⚠ | 2SD1153 | ″ | | 1 |
| QG05~G08 G16~G20,G23 G24,G26,H51 H52,H57 | | 2SC1684(R,S) | ″ | | 15 |
| QG10,G11,G21 G25,H53~H56 | | 2SA1175(H,F,E) | ″ | | 8 |
| QG12~G15 | ⚠ | 2SC945L(QA,PA) | ″ | | 4 |
| QG22 | | 2SK105(E,F) | F.E. Transistor | | 1 |
| DG01,G02,G03 G05,G07~G12 G15,G16,G17 G22 | | MA165 | Si. Diode | | 14 |
| DG23 | | RD6.8E(B3) | ″ | | 1 |

## Other P.W. Board Parts List

⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|---|
| **(Power Switch P.W.B.)** | | | | | |
| | | VMW4612-002 | P.W. Board | | 1 |
| | | QSP1110-305BS | Push Switch | DD-99B | 1 |
| | | 〃 -305 | 〃 | DD-99A/E | 1 |
| | | 〃 -308 | 〃 | DD-99C/J | 1 |
| | | 〃 -306 | 〃 | DD-99U | 1 |
| | | QFZ9010-103 | C. Capacitor | DD-99A/B/E | 1 |
| | | QFZ9014-103 | 〃 | DD-99C/J | 1 |
| | | QFZ9015-103 | 〃 | DD-99U | 1 |
| **(V.R.P.W.B.)** | | | | | |
| | | VMW1567-＊＊＊B | P.W.Board | | 1 |
| | | QVZ6201-001 | V. Resistor | for Input | 1 |
| **(V.R.P.W.B.)** | | | | | |
| | | QVR2F6A-014 | V. Resistor | for Output | 1 |
| **(Timer P.W.B.)** | | | | | |
| | | QSS2301-102 | Slide Switch | | 1 |
| **(LED P.W.B.)** | | | | | |
| | | SLP-155B-01V | L.E.D. | for ERROR, Source | 2 |
| | | SLP-255B-01V | 〃 | for B.E.SH.P Tape. M | 8 |
| | | QRD161J-471 | C. Resistor | 470 | 2 |
| | | QRD161J-271 | 〃 | 270 | 7 |
| | | QRD147J-220S | 〃 | 22 | 1 |
| | | QLP3601-002 | Pilot Lamp | | 1 |
| | | VJZ4006-001 | Lamp Shade | | 1 |
| | | VMW2539-＊＊＊D | P.W. Board | | 1 |
| Q903,904,906 | ⚠ | 2SC1162(B,C) | Si. Transistor | | 3 |
| Q905 | | 2SB772(Q,P) | 〃 | | 3 |
| R921 | | QRD029J-3R3 | MF. Resistor | 3.3 2 W | 1 |
| **(E. Counter)** | | | | | |
| | | VMW2539-＊＊＊B | P.W. Board | | 1 |
| RK01,K05,K07<br>K08,K10,K12<br>K20 | | QRD161J-103 | C. Resistor | 10 kΩ 1/4 W | 7 |
| RK02,K13 | | 〃 -102 | 〃 | 1 kΩ 〃 | 2 |
| RK03,K16-K19<br>K24,K25 | | 〃 -223 | 〃 | 22 kΩ 〃 | 7 |
| RK04,K06,K09<br>K11 | | 〃 -153 | 〃 | 15 kΩ 〃 | 4 |
| RK21 | | 〃 -473 | 〃 | 47 kΩ 〃 | 1 |
| RK22,K23 | | 〃 -222 | 〃 | 2.2 kΩ 〃 | 2 |
| RK26 | | 〃 -333 | 〃 | 33 kΩ 〃 | 1 |
| RK39 | | 〃 -514 | 〃 | 510 kΩ 〃 | 1 |
| RMK1 | | VCR0003-001 | R. Network | | 1 |
| CK01 | | QET41CR-107N | E. Capacitor | 100 µF 16 V | 1 |
| CK02 | | QCS11HJ-111 | C. Capacitor | 110 pF 50 V | 1 |
| CK03 | | 〃 -471 | 〃 | 470 pF 〃 | 1 |
| CK04 | | QCF11HP-103 | 〃 | 0.01 µF 1 | |
| TK01 | | CSB400P | Ceralock | | 1 |
| **(FL Tube P.W.B.)** | | | | | |
| | | VMW2539-＊＊＊C | P.W.Board | | 1 |
| FLK1 | | 4-ST-01ZS1 | FL Tube | | 1 |
| QK01-K07 | | 2SC2785(E,F) | Si. Transistor | or 2SC1684(R,S) | 7 |
| DK01 | | RD6.8E(B3) | Zener Diode | | 1 |
| ICK01 | | UPD554C-088 | IC | | 1 |
| SK01-K04 | | QSP0241-051 | Push Switch | | 1 |
| CNK1 | | QMV5005-007 | Plug Ass'y | | 1 |
| **(Reset P.W.B.)** | | | | | |
| | | VMW4633-001 | P.W. Board | | 1 |
| SK05 | | QSP0301-001 | Tact Switch | | 1 |
| LK01 | | QLP3201-011 | Lamp | | 1 |

| Ref. No. | ⚠ | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|---|
| **(Touch Key Board P.W.B.)** | | | | | |
| | | VMW3557-001 | P.W.Board | | 1 |
| R801,802 | | QRD147J-471S | C. Resistor | 470 Ω 1/4 W | 2 |
| R803,804 | | 〃 -391S | 〃 | 390 Ω 〃 | 2 |
| R805,806 | | 〃 -472S | 〃 | 4.7 kΩ 〃 | 2 |
| D801,802 | | 1SS53 | Si. Diode | or MA150 | 2 |
| D803,804,806<br>807-810 | | SLP235B-B | LED | | 6 |
| D805,806 | | SLP135B-B | 〃 | | 2 |
| | | QSP0301-001 | Tact Switch | | 9 |

# Motor Circuit of DD-99

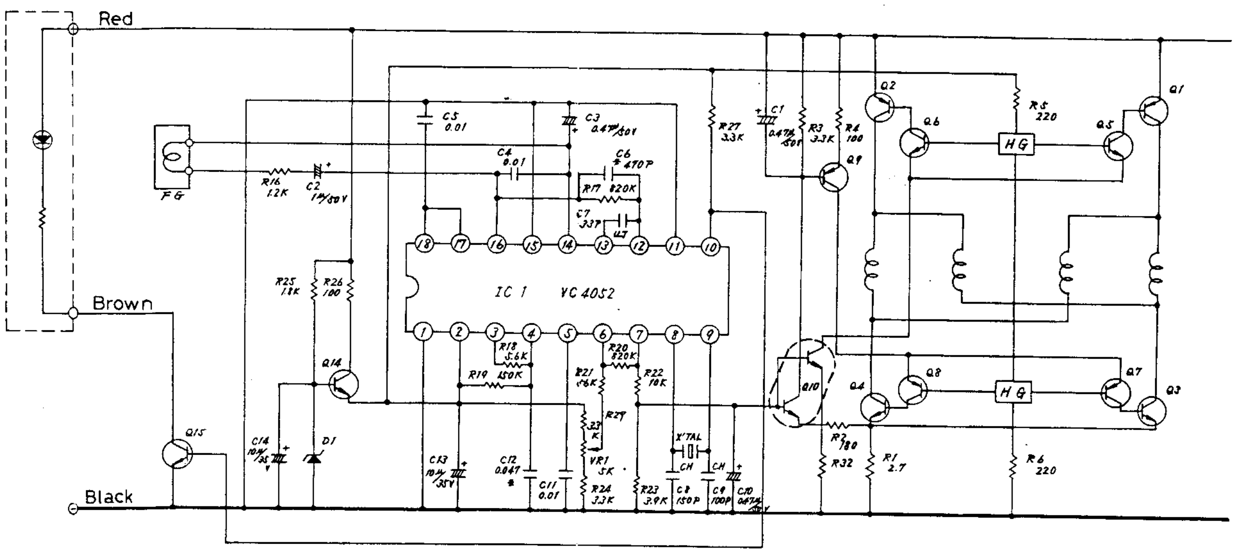

Red
Brown
Black
FG
R16 1.2K
C2 1μ/50V
C5 0.01
C3 0.47μ/50V
C4 0.01
C6 470P
R17 820K
C7 33P
R27 3.3K
C1 0.47μ/50V
R3 3.3K
R4 100
R5 220
Q1
Q2
Q5
Q6
Q9
HG
IC 1 VC4052
R25 1.1K
R26 100
Q14
Q15
C14 10μ/35V
D1
R18 5.6K
R19 150K
R20 820K
R21 56K
R22 18K
R28 33K
VR1 5K
C13 10μ/35V
C12 0.047
C11 0.01
R24 3.3K
R23 3.9K
C8 150P
C9 100P
C10 0.47μ
X'TAL
CH
Q10
Q4
Q8
Q7
Q3
R7 180
R32
R1 2.7
R6 220

Fig. 29

| | |
|---|---|
| IC1 | VC4052 |
| Q1,2 | 2SA952 K or L |
| Q3,4 | 2SC2001 K or L |
| Q5,6 | 2SC945 P or Q |
| Q7,8 | 2SA733 P or Q |
| Q9 | 2SA733 P or K |
| Q14,15 | 2SC945 P or K |
| D1 | RD5,6EKVM-2 |
| Q10 | 2SC2291 G or F |

**Notes**

Unless otherwise specified, all resistors are 1/4 W ±5% carbon resistors.

* mark capacitors are polyester film condencer

R32 470 Ω = Q1 and Q2 are K rank
220 Ω = Q1 and Q2 are L rank

# Packing

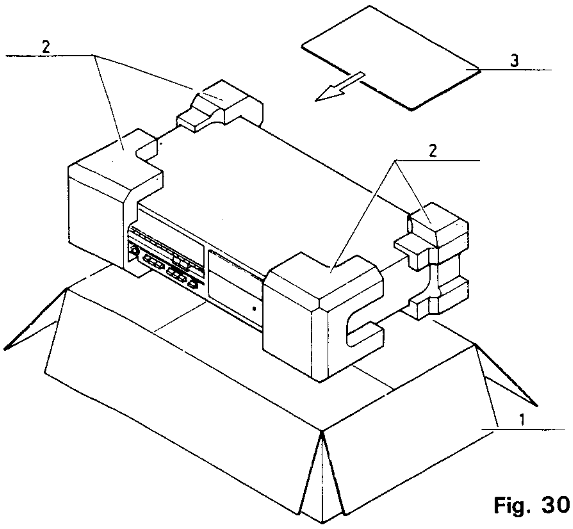


Fig. 30

**Positions of controls and switch knobs at renew packing.**

Power switch : OFF
Timer standby switch : OFF
NR switch : OFF
Input level control : MIN
Output level control : MAX
MPX Filter : OFF
Tape select switch : SF/NORM
Meter switch : VU
Monitor switch : TAPE
Counter switch : OFF
Mecha. operation buttons : OFF

## Packing Material Parts List

| Ref. No. | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|
| 1 | VPD2094-J02 | Carton | DD-99A | 1 |
| | 〃 -J03 | 〃 | DD-99B | 1 |
| | 〃 -J04 | 〃 | DD-99C | 1 |
| | 〃 -J05 | 〃 | DD-99E | 1 |
| | 〃 -J06 | 〃 | DD-99J | 1 |
| | 〃 -J07 | 〃 | DD-99U | 1 |
| 2 | VPH3120-001 | Cushion (L) | | 1 |
| 3 | VPH3126-001 | 〃 (R) | | 1 |
| | Q04141H | Wire Clamp | for Power Cord | 1 |
| | TKS000501-01 | Sheet | for Unit | 1 |
| | QPGA060-06005 | Envelope | 〃<br>DD-99A/C/E/J/U | 1 |
| | VPE4002-005 | Poly Bag | for Unit<br>DD-99B | 1 |
| | AP4056A-36 | Envelope | for Pin Cord | 1 |
| 4 | AP4056B-077 | 〃 | for Inst. Book | 1 |

# Accessories

⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

| Parts No. | ⚠ | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|
| VMP0002-00B | | Pin Cord Ass'y | | 2 |
| VNN0092-301 | | Instruction Book | DD-99B/E | 1 |
| 〃 -901 | | 〃 | DD-99A/C/J/U | 1 |
| BT20013C | | Guarantee Certificate | DD-99B | 1 |
| BT20029B | | Warranty Card | DD-99A | 1 |
| BT20025E | | 〃 | DD-99C | 1 |
| BT20047 | | 〃 | DD-99J/U | 1 |
| TJL000443-01 | | Seal | DD-99B | 1 |
| | | BEAB Label | DD-99B | 1 |
| T44362-001 | | CSA Marker | DD-99C | 1 |
| TLT000505-01 | | UL/CSA Caution Label | DD-99C/J | 2 |
| VNC5004-001 | | Mark Sticker | DIN 45500,DD-99B/E | 1 |
| VND4013-001 | | Warning Label | DD-99A/B/E/J | 1 |
| QZL1002-003BS | | 〃 | for 2-Pin Power Cord, DD-99B | 1 |
| E66416-003 | | Envelope | for Warranty Card, DD-99J | 1 |
| BT20046 | | Special Reply Card | DD-99J/U | 1 |
| BT20044B | | Safety Instruction | DD-99J | 1 |
| E7795-1 | | EP Mark | DD-99E | 1 |
| V04062-001 | ⚠ | Siemens Plug | DD-99E | 1 |
| T46328-001 | | Caution Label | DD-99J | 1 |
| VPZ4001-001 | | Serial Ticket | DD-99A/B/E/J/U | 1 |
| T43758-003 | | 〃 | DD-99C | 1 |
| VND4037-001 | | F Mark Label | DD-99E | 1 |
| VNC5311-101 | | Caution Card | DD-99U | 1 |